AO 120 (Rev. 08/10)

TO:	**Mail Stop 8** **Director of the U.S. Patent and Trademark Office** **P.O. Box 1450** **Alexandria, VA 22313-1450**	**REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK**

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Souther District of Florida (Ft. Pierce) on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
2:25-cv-14047-DMM	2/7/2025	Souther District of Florida (Ft. Pierce)

PLAINTIFF	DEFENDANT
GEM Products, LLC	Rupp Marine, Inc.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	See Complaint		
2			
3			
4			
5			

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE
Angela E. Noble	Clifford Charles	2/7/2025

Copy 1—Upon initiation of action, mail this copy to Director **Copy 3—Upon termination of action, mail this copy to Director**
Copy 2—Upon filing document adding patent(s), mail this copy to Director **Copy 4—Case file copy**

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IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF FLORIDA

GEM Products, LLC, Plaintiff, vs. Rupp Marine, Inc. Defendant.	Case No. Civil Action No. **JURY DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff, GEM Products, LLC ("GEM Products"), for its complaint against Defendant, Rupp Marine, Inc. ("Rupp Marine"), states as follows:

NATURE OF ACTION

This is an action for infringement of the claims of US Patent Nos.: (a) 8,656,632 ('632 Patent); (b) 9,392,778 ('778 Patent); (c) 9,717,226 ('226 Patent); and (d) 11,589,566 ('566 Patent) (collectively "GEM Products' Patents"), pursuant to the US Patent Act, 35 USC § 101, *et. seq.*, stemming from Rupp Marine's acts of making, using, selling, offering to sell, and/or importing into the United States, certain fishing outriggers and outrigger accessories.

PARTIES

1. Plaintiff, GEM Products, is a limited liability company organized and existing under the laws of the State of Florida, and has a principal place of business at 12770 Flagler Center Boulevard, Jacksonville, Florida.

2. Defendant, Rupp Marine, is a corporation organized and existing under the laws of the State of Florida, and has a principal place of business at 4761 SE Anchor Avenue, Stuart, Florida.

JURISDICTION AND VENUE

3. This Court has jurisdiction over this matter pursuant 28 U.S.C. §1338(a), in that this matter arises under an Act of Congress relating to patents.

4. This Court has personal jurisdiction over Rupp Marine because Rupp Marine has a principal place of business(es) located within this District, has committed the acts complained of herein in this District, and/or transacts business within this District.

5. Venue is proper in this district pursuant to 28 U.S.C. §1400(b), in that Rupp Marine resides in this District, and/or has committed acts of infringement and has a regular and established place of business in this District.

FACTS

6. GEM Products is a well-known designer, developer, engineer, manufacturer, marketer, and seller of high-quality, high-end boating and fishing products and equipment.

7. Purchasers, customers, and end-users purchase and use GEM Products' products because of GEM Products' service, reputation, and goodwill, and the high quality and reliability of the products that GEM Products designs and sells.

8. GEM Products is the owner of all rights, title, and interest in and to each of GEM Products' Patents (respectively attached as Exhibits A, B, C, and D).

9. Rupp Marine is making, using, selling, offering to sell, and/or importing into the United States, certain outrigger products and outrigger accessories, including, but not limited to, Rupp Marine's "Outriggers with Pulley Option," "Outriggers with Pulley Clusters," "Pulley Clusters" (part nos. CA-0144, CA-0145, and CA-0146), and "Pulley Upgrades" (part nos. CA-04PC-3X, CA-04PC-2X, CA-03PC-3X and CA-03PC-2X) (collectively "Accused Products") (attached as Exhibit E are annotated copies of pp. 9 and 15 of Rupp Marine's 2024-2025 Catalog

showing exemplar Outriggers with Pulley Clusters, Pulley Clusters and Outriggers with Pulley Option (red-boxed portions), and pages from Rupp Marine's website showing exemplar Rupp Marine's Pulley Upgrades).

10. Rupp Marine provides its customers with "Rigging Instructions," instructing its customers how to rig Rupp's Marine's Outriggers with Pulley Clusters and outriggers with Rupp Marine's Pulley Clusters (*see* Exhibit F), and Rupp Marine's Outriggers with Pulley Option and outriggers with Rupp Marine's Pulley Upgrades (*see* Exhibit G).

11. Attached as Exhibit F are claim charts, comparing at least one of Rupp Marine's Outriggers with Pulley Clusters and Rupp Marine's Pulley Clusters to independent claim 1 of each of GEM Products' Patents, evidencing direct and/or indirect infringement by Rupp Marine.

12. Attached as Exhibit G are claim charts, comparing at least one of Rupp Marine's Outriggers with Pulley Option and Pulley Upgrades to independent claim 1 of each of GEM Products' Patents, evidencing direct and/or indirect infringement by Rupp Marine.

COUNT I
INFRINGEMENT OF THE '632 PATENT

13. GEM Products restates and realleges the allegations in Paragraphs 1-12, as if fully set forth herein.

14. Rupp Marine's actions of using, manufacturing, selling, offering for sale, and/or importing into the United States, the Accused Products cause Rupp Marine to directly and/or indirectly infringe at least claims 1-11, and 15-17 of GEM Products' '632 Patent, literally and/or under the Doctrine of Equivalents. (*See e.g.*, Exhibit F).

15. For example, Rupp Marine's Outriggers with Pulley Clusters cause Rupp Marine to contributorily infringe under 35 USC §271(c) at least claims 1-11 and 15-16 of the '632 Patent, since those Outriggers with Pulley Clusters are a material part of a combination or apparatus for

use in practicing the invention(s) claimed in at least claims 1-11 and 15-16 of the '632 Patent, with Rupp Marine knowing such Outriggers with Pulley Clusters are especially made or adapted for use in an infringement of at least claims 1-11 and 15-16 of the '632 Patent, and such Outriggers with Pulley Clusters are not a staple article or commodity of commerce suitable for noninfringing use. (*See e.g.*, Exhibit F).

16. Likewise, for example, Rupp Marine's Pulley Clusters cause Rupp Marine to contributorily infringe under 35 USC §271(c) at least claims 1-11 and 15-16 of the '632 Patent, since those Pulley Clusters are a material part of a combination or apparatus for use in practicing the invention(s) claimed in at least claims 1-11 and 15-16 of the '632 Patent, with Rupp Marine knowing such Pulley Clusters are especially made or adapted for use in an infringement of at least claims 1-11 and 15-16 of the '632 Patent, and such Pulley Clusters are not a staple article or commodity of commerce suitable for noninfringing use. (*See e.g.*, Exhibit F).

17. Also, for example, Rupp Marine's Outriggers with Pulley Option cause Rupp Marine to contributorily infringe under 35 USC §271(c) at least claims 1-11 and 15-16 of the '632 Patent, since those Outriggers with Pulley Option are a material part of a combination or apparatus for use in practicing the invention(s) claimed in at least claims 1-11 and 15-16 of the '632 Patent, with Rupp Marine knowing such Outriggers with Pulley Option are especially made or adapted for use in an infringement of at least claims 1-11 and 15-16 of the '632 Patent, and such Outriggers with Pulley Option are not a staple article or commodity of commerce suitable for noninfringing use. (*See e.g.*, Exhibit G).

18. Likewise, for example, Rupp Marine's Pulley Upgrades cause Rupp Marine to contributorily infringe under 35 USC §271(c) at least claims 1-11 and 15-16 of the '632 Patent, since those Pulley Upgrades are a material part of a combination or apparatus for use in practicing

the invention(s) claimed in at least claims 1-11 and 15-16 of the '632 Patent, with Rupp Marine knowing such Pulley Upgrades are especially made or adapted for use in an infringement of at least claims 1-11 and 15-16 of the '632 Patent, and such Pulley Upgrades are not a staple article or commodity of commerce suitable for noninfringing use. (*See e.g.*, Exhibit G).

19. Rupp Marine has notice of its infringement, as prescribed by 35 U.S.C. § 287(a).

20. Rupp Marine's infringement has been, and continues to be, willful.

21. Rupp Marine's infringement of the claims of the '632 Patent has caused, and continues to cause, irreparable injury to GEM Products, and unless and until Rupp Marine's infringement of the claims of the '632 Patent is enjoined by this Court, GEM Products will continue to suffer irreparable injury because of Rupp Marine's infringement. GEM Products has no adequate remedy at law.

COUNT II
INFRINGEMENT OF THE '778 PATENT

22. GEM Products restates and realleges the allegations in Paragraphs 1-12, as if fully set forth herein.

23. Rupp Marine's actions of using, manufacturing, selling, offering for sale, and/or importing into the United States, the Accused Products cause Rupp Marine to directly and/or indirectly infringe at least claim 1 of GEM Products' '778 Patent, literally and/or under the Doctrine of Equivalents. (*See e.g.*, Exhibit F).

24. For example, Rupp Marine's Outriggers with Pulley Clusters cause Rupp Marine to contributorily infringe under 35 USC §271(c) at least claim 1 of the '778 Patent, since those Outriggers with Pulley Clusters are a material part of a combination or apparatus for use in practicing the invention(s) claimed in at least claim 1 of the '778 Patent, with Rupp Marine knowing such Outriggers with Pulley Clusters are especially made or adapted for use in an

infringement of at least claim 1 of the '778 Patent, and such Outriggers with Pulley Clusters are not a staple article or commodity of commerce suitable for noninfringing use. (*See e.g.*, Exhibit F).

25. Likewise, for example, Rupp Marine's Pulley Clusters cause Rupp Marine to contributorily infringe under 35 USC §271(c) at least claim 1 of the '778 Patent, since those Pulley Clusters are a material part of a combination or apparatus for use in practicing the invention(s) claimed in at least claim 1 of the '778 Patent, with Rupp Marine knowing such Pulley Clusters are especially made or adapted for use in an infringement of at least claim 1 of the '778 Patent, and such Pulley Clusters are not a staple article or commodity of commerce suitable for noninfringing use. (*See e.g.*, Exhibit F).

26. Also, for example, Rupp Marine's Outriggers with Pulley Option cause Rupp Marine to contributorily infringe under 35 USC §271(c) at least claim 1 of the '778 Patent, since those Outriggers with Pulley Option are a material part of a combination or apparatus for use in practicing the invention(s) claimed in at least claim 1 of the '778 Patent, with Rupp Marine knowing such Outriggers with Pulley Option are especially made or adapted for use in an infringement of at least claim 1 of the '778 Patent, and such Outriggers with Pulley Option are not a staple article or commodity of commerce suitable for noninfringing use. (*See e.g.*, Exhibit G).

27. Likewise, for example, Rupp Marine's Pulley Upgrades cause Rupp Marine to contributorily infringe under 35 USC §271(c) at least claim 1 of the '778 Patent, since those Pulley Upgrades are a material part of a combination or apparatus for use in practicing the invention(s) claimed in at least claim 1 of the '778 Patent, with Rupp Marine knowing such Pulley Upgrades are especially made or adapted for use in an infringement of at least claim 1 of the '778 Patent, and such Pulley Upgrades are not a staple article or commodity of commerce suitable for noninfringing use. (*See e.g.*, Exhibit G).

28. Rupp Marine has notice of its infringement, as prescribed by 35 U.S.C. § 287(a).

29. Rupp Marine's infringement has been, and continues to be, willful.

30. Rupp Marine's infringement of the claims of the '778 Patent has caused, and continues to cause, irreparable injury to GEM Products, and unless and until Rupp Marine's infringement of the claims of the '778 Patent is enjoined by this Court, GEM Products will continue to suffer irreparable injury because of Rupp Marine's infringement. GEM Products has no adequate remedy at law.

COUNT III
INFRINGEMENT OF THE '226 PATENT

31. GEM Products restates and realleges the allegations in Paragraphs 1-12, as if fully set forth herein.

32. Rupp Marine's actions of using, manufacturing, selling, offering for sale, and/or importing into the United States, the Accused Products cause Rupp Marine to directly and/or indirectly infringe at least claims 1-3, 5-6, 8, 10-12 and 17 of GEM Products' '226 Patent, literally and/or under the Doctrine of Equivalents. (*See e.g.*, Exhibit F).

33. For example, Rupp Marine's Outriggers with Pulley Clusters cause Rupp Marine to contributorily infringe under 35 USC §271(c) at least claims 1-3, 5-6, 8, 10-12 and 17 of the '226 Patent, since those Outriggers with Pulley Clusters are a material part of a combination or apparatus for use in practicing the invention(s) claimed in at least claims 1-3, 5-6, 8, 10-12 and 17 of the '226 Patent, with Rupp Marine knowing such Outriggers with Pulley Clusters are especially made or adapted for use in an infringement of at least claims 1-3, 5-6, 8, 10-12 and 17 of the '226 Patent, and such Outriggers with Pulley Clusters are not a staple article or commodity of commerce suitable for noninfringing use. (*See e.g.*, Exhibit F).

34. Likewise, for example, Rupp Marine's Pulley Clusters cause Rupp Marine to contributorily infringe under 35 USC §271(c) at least claims 1-3, 5-6, 8, 10-12 and 17 of the '226 Patent, since those Pulley Clusters are a material part of a combination or apparatus for use in practicing the invention(s) claimed in at least claims 1-3, 5-6, 8, 10-12 and 17 of the '226 Patent, with Rupp Marine knowing such Pulley Clusters are especially made or adapted for use in an infringement of at least claims 1-3, 5-6, 8, 10-12 and 17 of the '226 Patent, and such Pulley Clusters are not a staple article or commodity of commerce suitable for noninfringing use. (*See e.g.*, Exhibit F).

35. Also, for example, Rupp Marine's Outriggers with Pulley Option cause Rupp Marine to contributorily infringe under 35 USC §271(c) at least claims 1-3, 5-6, 8, 10-12 and 17 of the '226 Patent, since those Outriggers with Pulley Option are a material part of a combination or apparatus for use in practicing the invention(s) claimed in at least claims 1-3, 5-6, 8, 10-12 and 17 of the '226 Patent, with Rupp Marine knowing such Outriggers with Pulley Option are especially made or adapted for use in an infringement of at least claims 1-3, 5-6, 8, 10-12 and 17 of the '226 Patent, and such Outriggers with Pulley Option are not a staple article or commodity of commerce suitable for noninfringing use. (*See e.g.*, Exhibit G).

36. Likewise, for example, Rupp Marine's Pulley Upgrades cause Rupp Marine to contributorily infringe under 35 USC §271(c) at least claims 1-3, 5-6, 8, 10-12 and 17 of the '226 Patent, since those Pulley Upgrades are a material part of a combination or apparatus for use in practicing the invention(s) claimed in at least claims 1-3, 5-6, 8, 10-12 and 17 of the '226 Patent, with Rupp Marine knowing such Pulley Upgrades are especially made or adapted for use in an infringement of at least claims 1-3, 5-6, 8, 10-12 and 17 of the '226 Patent, and such Pulley

Upgrades are not a staple article or commodity of commerce suitable for noninfringing use. (*See e.g.*, Exhibit G).

37. Rupp Marine has notice of its infringement, as prescribed by 35 U.S.C. § 287(a).

38. Rupp Marine's infringement has been, and continues to be, willful.

39. Rupp Marine's infringement of the claims of the '226 Patent has caused, and continues to cause, irreparable injury to GEM Products, and unless and until Rupp Marine's infringement of the claims of the '226 Patent is enjoined by this Court, GEM Products will continue to suffer irreparable injury because of Rupp Marine's infringement. GEM Products has no adequate remedy at law.

COUNT IV
INFRINGEMENT OF THE '566 PATENT

40. GEM Products restates and realleges the allegations in Paragraphs 1-12, as if fully set forth herein.

41. Rupp Marine's actions of using, manufacturing, selling, offering for sale, and/or importing into the United States, the Accused Products cause Rupp Marine to directly and/or indirectly infringe at least claims 1-5, and 7-17 of GEM Products' '566 Patent, literally and/or under the Doctrine of Equivalents. (*See e.g.*, Exhibits F and G).

42. For example, Rupp Marine's Outriggers with Pulley Clusters cause Rupp Marine to contributorily infringe under 35 USC §271(c) at least claims 1-5, and 7-17 of the '566 Patent, since those Outriggers with Pulley Clusters are a material part of a combination or apparatus for use in practicing the invention(s) claimed in at least claims 1-5, and 7-17 of the '566 Patent, with Rupp Marine knowing such Outriggers with Pulley Clusters are especially made or adapted for use in an infringement of at least claims 1-5, and 7-17 of the '566 Patent, and such Outriggers with

Pulley Clusters are not a staple article or commodity of commerce suitable for noninfringing use. (*See e.g.*, Exhibit F).

43. Likewise, for example, Rupp Marine's Pulley Clusters cause Rupp Marine to contributorily infringe under 35 USC §271(c) at least claims 1-5, and 7-17 of the '566 Patent, since those Pulley Clusters are a material part of a combination or apparatus for use in practicing the invention(s) claimed in at least claims 1-5, and 7-17 of the '566 Patent, with Rupp Marine knowing such Pulley Clusters are especially made or adapted for use in an infringement of at least claims 1-5, and 7-17 of the '566 Patent, and such Pulley Clusters are not a staple article or commodity of commerce suitable for noninfringing use. (*See e.g.*, Exhibit F).

44. Also, for example, Rupp Marine's Outriggers with Pulley Option cause Rupp Marine to contributorily infringe under 35 USC §271(c) at least claims 1-5, and 7-17 of the '566 Patent, since those Outriggers with Pulley Option are a material part of a combination or apparatus for use in practicing the invention(s) claimed in at least claims 1-5, and 7-17 of the '566 Patent, with Rupp Marine knowing such Outriggers with Pulley Option are especially made or adapted for use in an infringement of at least claims 1-5, and 7-17 of the '566 Patent, and such Outriggers with Pulley Option are not a staple article or commodity of commerce suitable for noninfringing use. (*See e.g.*, Exhibit G).

45. Likewise, for example, Rupp Marine's Pulley Upgrades cause Rupp Marine to contributorily infringe under 35 USC §271(c) at least claims 1-5, and 7-17 of the '566 Patent, since those Pulley Upgrades are a material part of a combination or apparatus for use in practicing the invention(s) claimed in at least claims 1-5, and 7-17 of the '566 Patent, with Rupp Marine knowing such Pulley Upgrades are especially made or adapted for use in an infringement of at least claims

1-5, and 7-17 of the '566 Patent, and such Pulley Upgrades are not a staple article or commodity of commerce suitable for noninfringing use. (*See e.g.*, Exhibit G).

46. Rupp Marine has notice of its infringement, as prescribed by 35 U.S.C. § 287(a).

47. Rupp Marine's infringement has been, and continues to be, willful.

48. Rupp Marine's infringement of the claims of the '566 Patent has caused, and continues to cause, irreparable injury to GEM Products, and unless and until Rupp Marine's infringement of the claims of the '566 Patent is enjoined by this Court, GEM Products will continue to suffer irreparable injury because of Rupp Marine's infringement. GEM Products has no adequate remedy at law.

PRAYER FOR RELIEF

WHEREFORE, GEM Products prays for an order and judgment in its favor and against Rupp Marine, as follows:

a. preliminarily and permanently enjoining Rupp Marine, and its parents, subsidiaries, brands, affiliates, officers, directors, agents, employees, successors, and assigns, and any and all persons in active concert or participation with any of them, from using, making, causing to be made, selling, offering to sell, causing to be sold, and/or importing or causing to be imported into the United States, any product, including, but not limited to, the Accused Products, that cause Rupp Marine to directly infringe, contributorily infringe, or induce others to infringe, any claim of the '632 Patent, the '778 Patent, the '226 Patent and the '566 Patent,;

b. ordering Rupp Marine to pay to GEM Products the damages that GEM Products has incurred as a result of the acts complained of herein, including, but not limited to, an award to GEM Products for GEM Products' lost profits, but in no event less than a reasonable royalty, and including interest and costs, pursuant to 35 U.S.C. § 284;

c. a finding that Rupp Marine's actions and infringement has been willful, and that any damages award be trebled, pursuant to 35 U.S.C. § 284;

d. a finding that Rupp Marine's actions deem this case exceptional, and ordering Rupp Marine to pay to GEM Products its costs and expenses of this action, and its attorneys' fees, pursuant to 35 U.S.C. § 285, as a result of the acts complained of herein; and

e. awarding GEM Products any other relief that this Court deems just and fit.

JURY DEMAND

Pursuant to FRCP 38, GEM Products demands a trial by jury of all issues so triable.

Dated: February 6, 2025

Respectfully Submitted,
RAINES LEGAL

By: */s/ Elizabeth Jimenez*

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EXHIBIT A

US008656632B1

(12) **United States Patent**
Mercier

(10) **Patent No.: US 8,656,632 B1**
(45) **Date of Patent: Feb. 25, 2014**

(54) **OUTRIGGER LINE MANAGEMENT SYSTEM**

(76) Inventor: **Craig Mercier**, Harmans, MD (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 760 days.

(21) Appl. No.: **12/726,695**

(22) Filed: **Mar. 18, 2010**

(51) **Int. Cl.**
A01K 91/08 (2006.01)
B63B 35/14 (2006.01)
A01K 91/053 (2006.01)

(52) **U.S. Cl.**
USPC **43/27.4**; 43/43.12; 43/42.74; 114/255

(58) **Field of Classification Search**
USPC 43/27.4, 43.12, 43.13, 42.74, 27.2, 43/21.2; 114/255, 364; 211/119.01, 211/119.02, 119.03, 119.1, 119.11, 119.12, 211/119.13, 119.14
See application file for complete search history.

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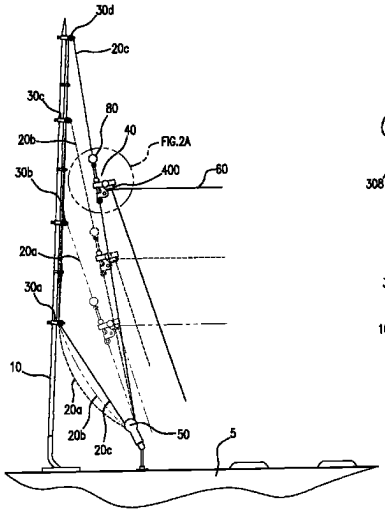
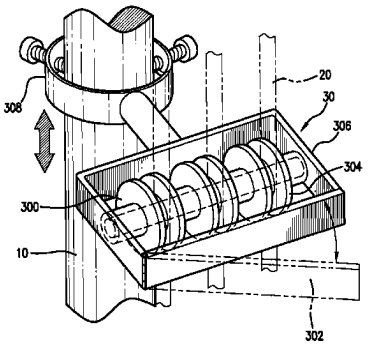
Primary Examiner — Darren W Ark
(74) *Attorney, Agent, or Firm* — Rosenberg, Klein & Lee

(57) **ABSTRACT**

A line management system for an outrigger structure is provided for guiding outrigger cords through cord passages to maintain an independent longitudinal displacement in order to prevent entanglement. The system includes a plurality of outrigger cords, cord management units, and retention devices. The plurality of cord management units are coupled to the outrigger structure and are longitudinally spaced one from the other along the outrigger structure. Each of the cord management units defines a plurality of transversely offset cord passages respectively guiding predetermined ones of outrigger cords to maintain an independent longitudinal displacement relative to the outrigger structure.

17 Claims, 6 Drawing Sheets





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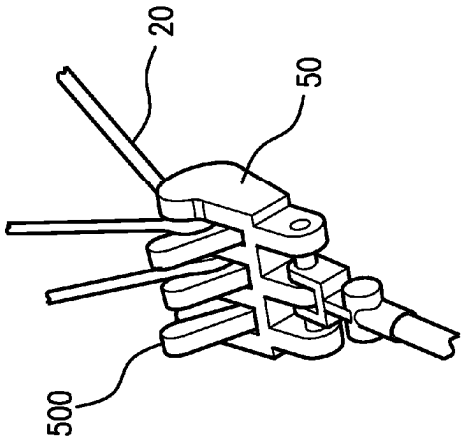

FIG. 1A

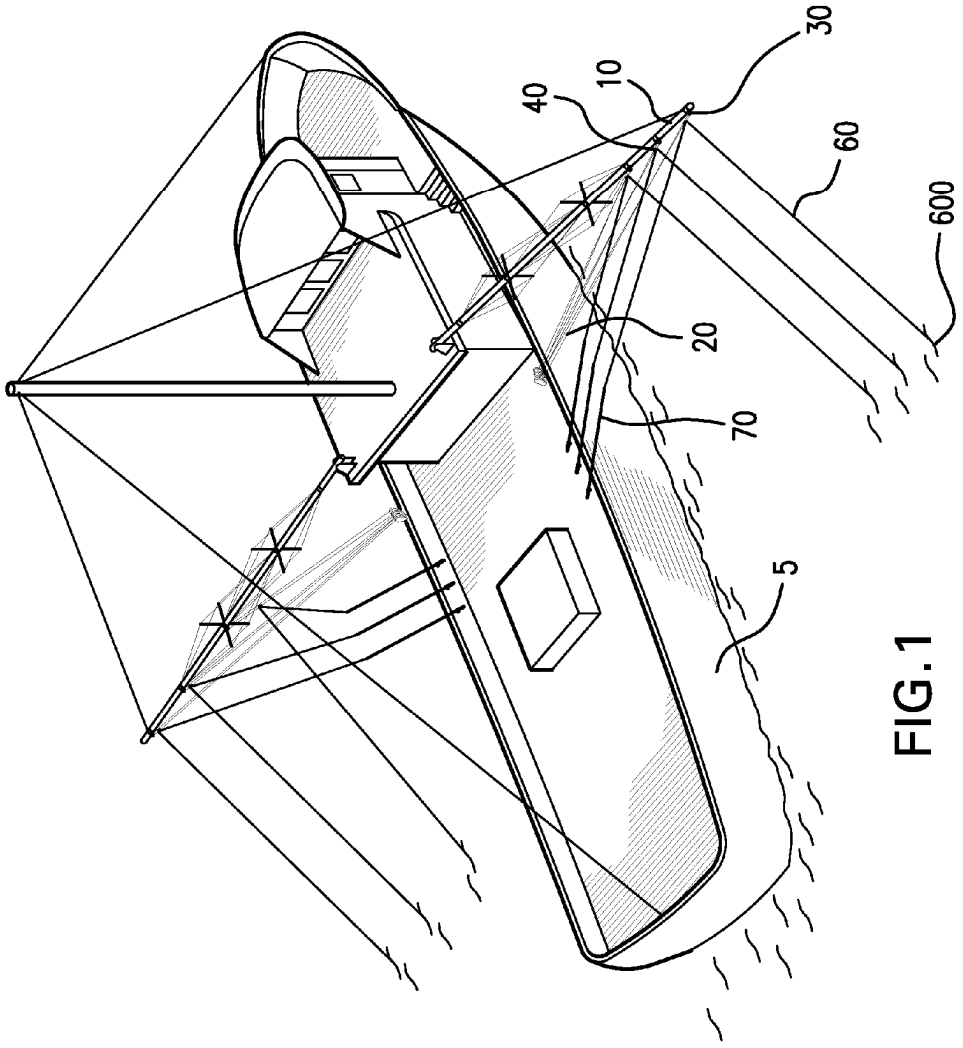

FIG. 1

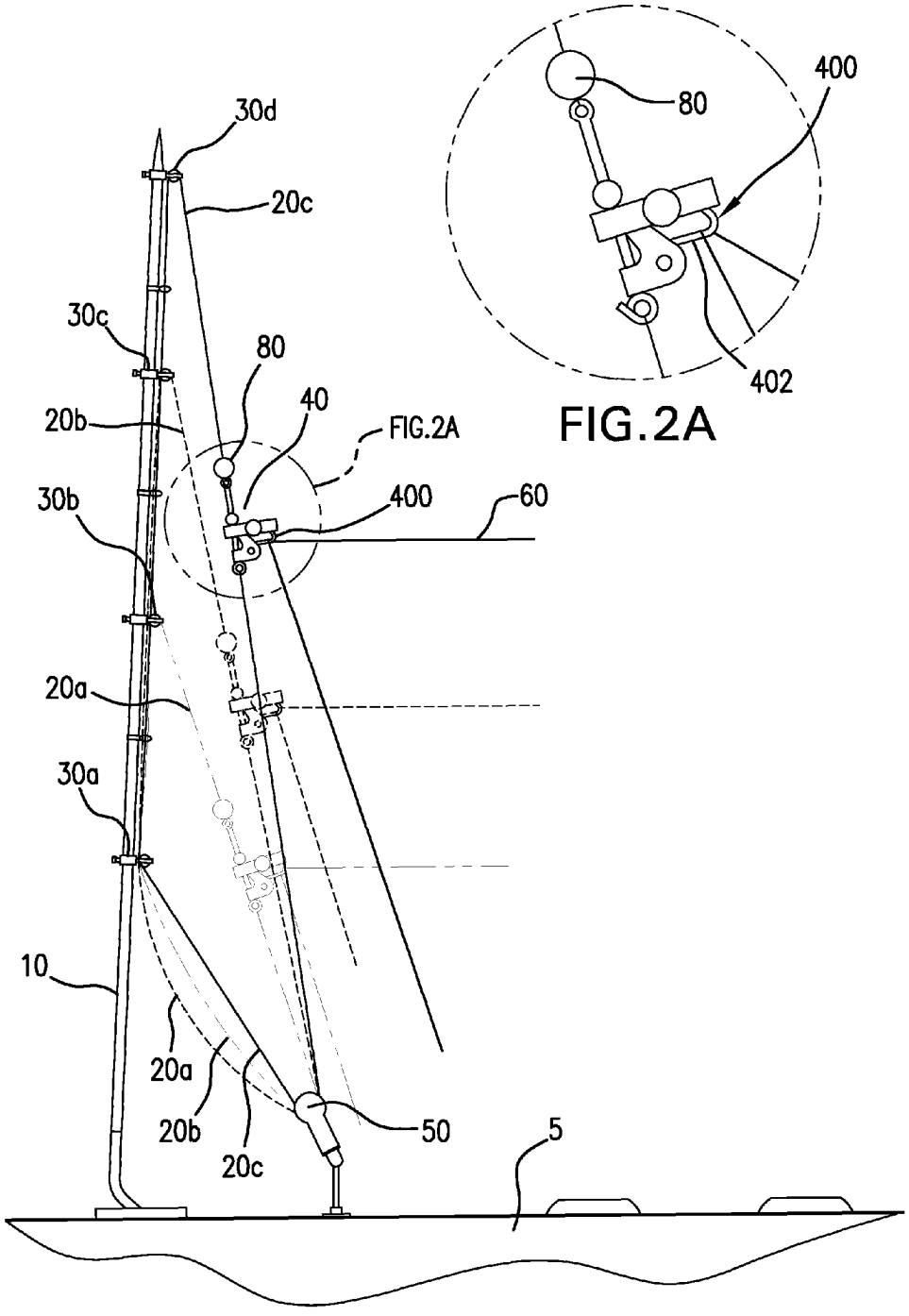
30d
20c
30c
80
40
20b
FIG.2A
400
60
30b
20a
30a
10
20a
20b
20c
50
5

FIG.2

80
400
402

FIG.2A

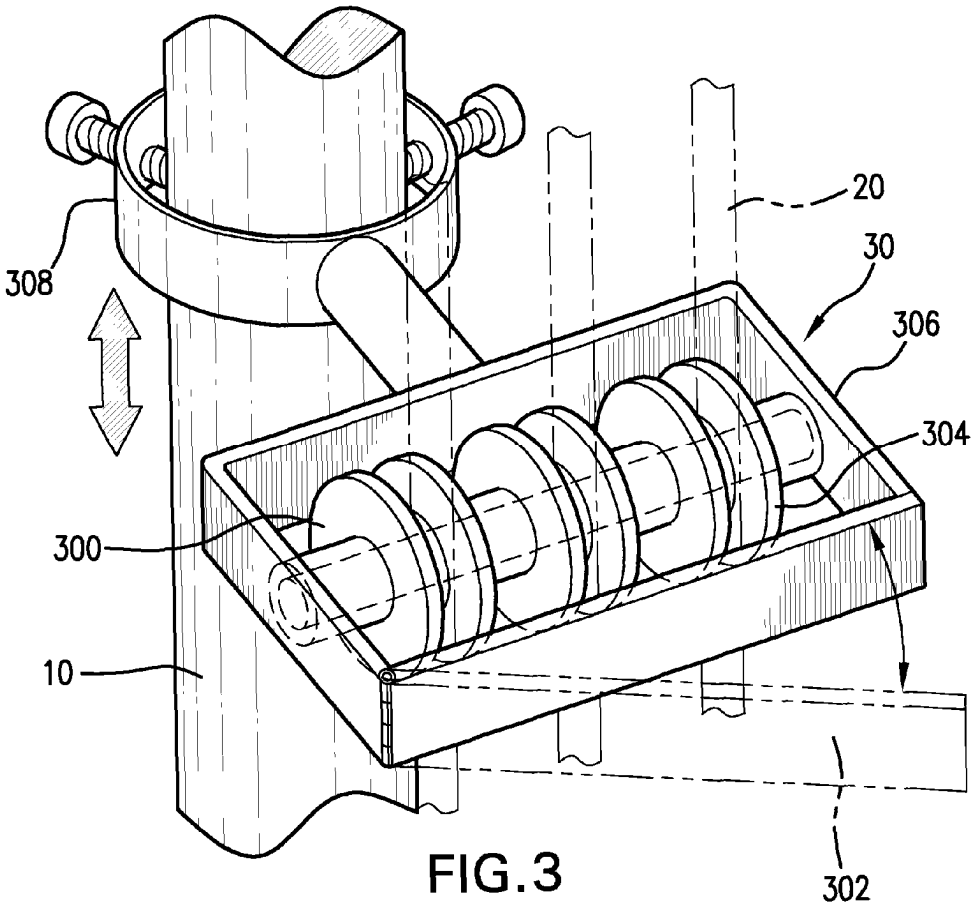

FIG.3

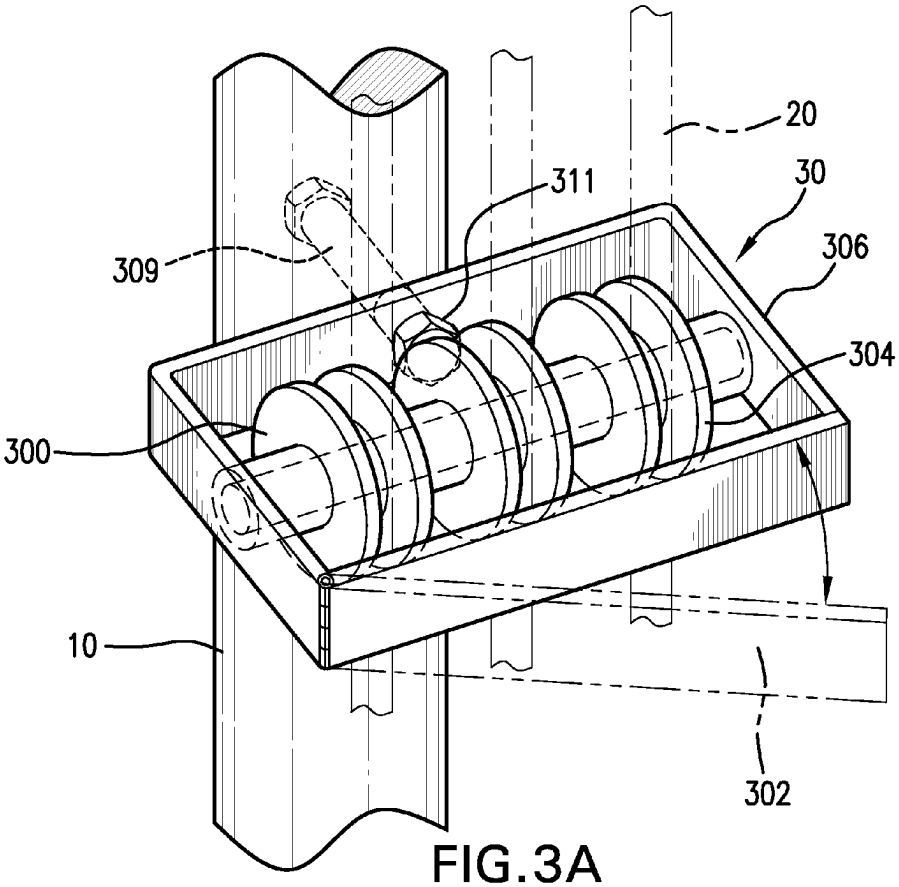

FIG.3A

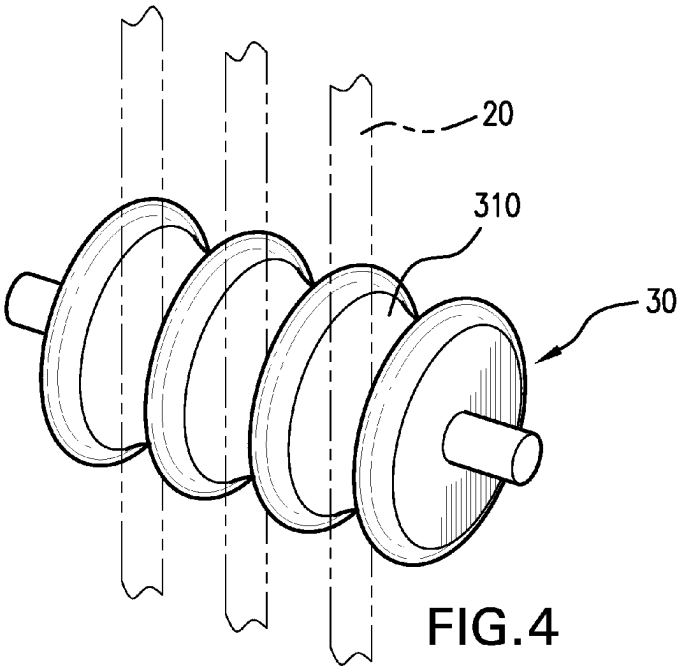

FIG.4

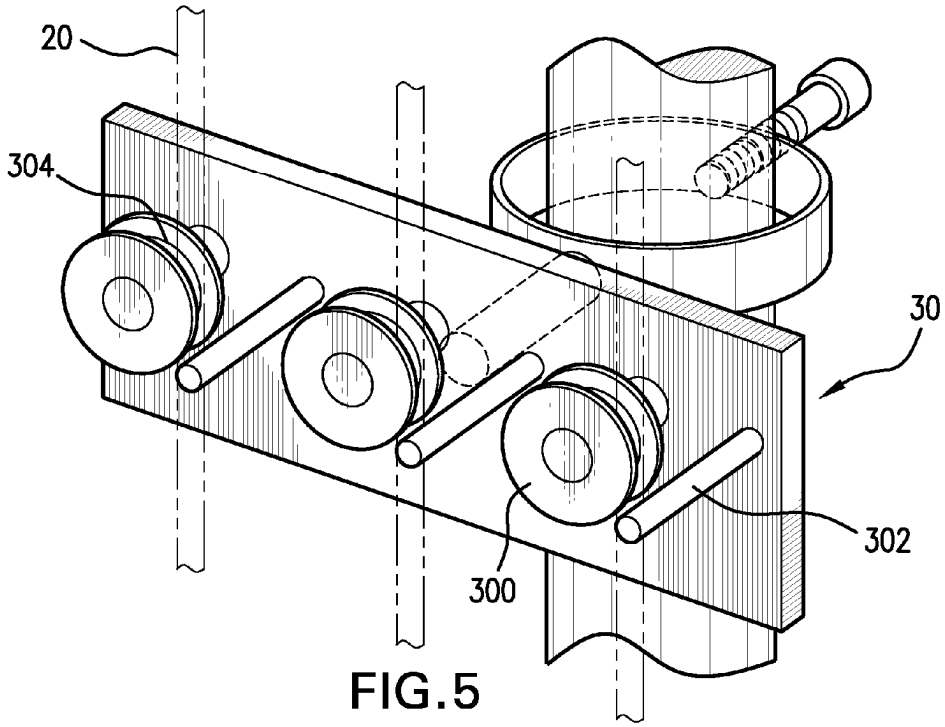

FIG.5

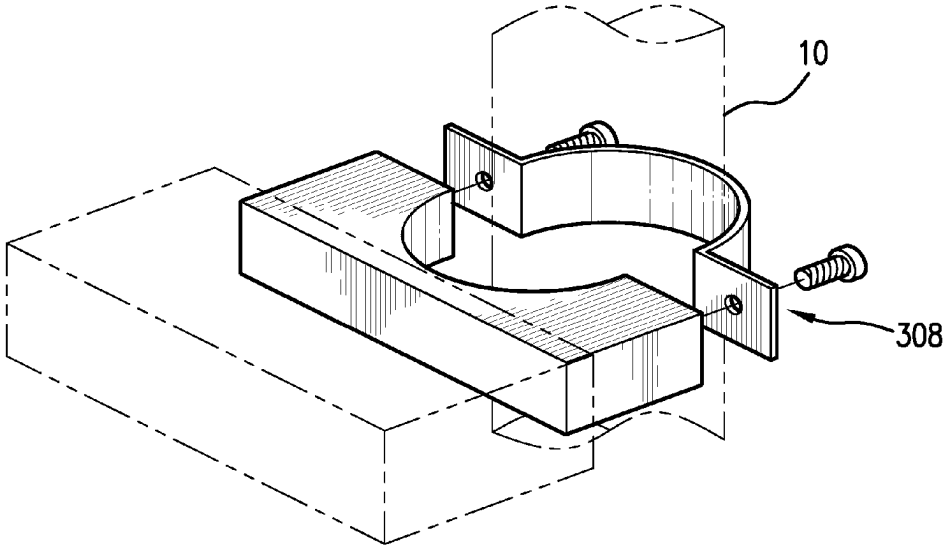

FIG.6

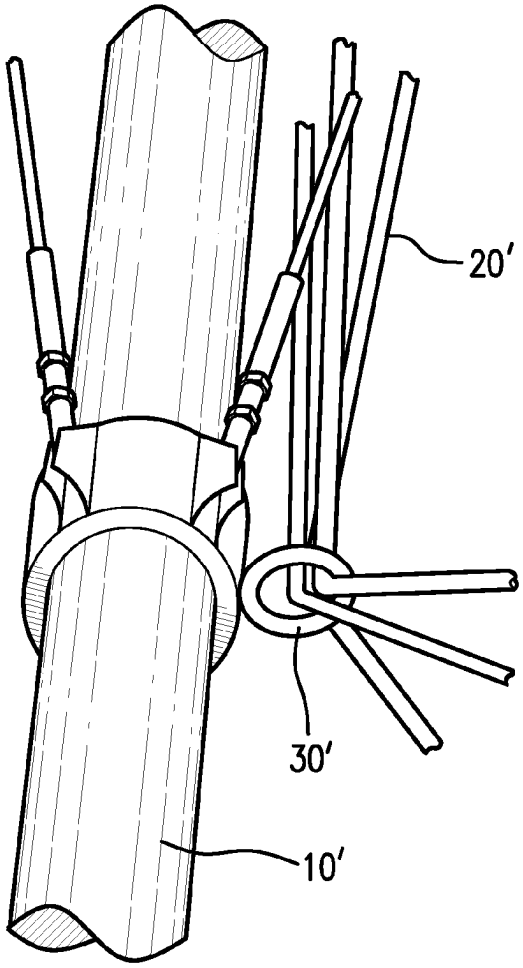

FIG. 7

OUTRIGGER LINE MANAGEMENT SYSTEM

BACKGROUND OF THE INVENTION

The subject outrigger line management system is generally directed to a system for enabling convenient displacement of articles along an outrigger structure. More specifically, the outrigger line management system maintains smooth and efficient displacement of individual lines, cords, or other mechanical link employed to so displace articles along a given outrigger support structure.

Outrigger structures are used on surface vessels to extend the lateral reach of the vessel for various purposes. Cast line fishing applications provide one example where outrigger structures provide useful extension of support points for concurrent use of multiple fishing lines. Typically, a fishing rod feeds a fishing line on which one or more baited hooks are provided. The baited ends of the fishing lines are cast into the water to attract fish about the given boat or other surface vessel. Where more than a few fishing lines are so cast from the same vessel into surrounding waters, inter-tangling remains a persistent problem, particularly where the vessel continues moving to, for example, troll the lines through the water. Tangling becomes an even greater threat when the vessel undergoes abrupt turns or encounters fast moving currents. To prevent such interference and tangling, fishing lines may be supported through one or more pivot points displaced along the length of an outrigger structure. The baited ends of different fishing lines are thereby spaced to be dragged through the water, each held safely away from the vessel and one another to avoid interference.

In this manner, outrigger support structures extend fishing/trolling lines laterally out beyond the wake of a moving boat. They allow the safe deployment of multiple fishing lines cast out from the boat each pivoted at different points along the outrigger structure to remain separated by sufficient fishing space (until release of the lines from their pivot points is triggered) to prevent entanglement.

Outrigger structures are usually installed on a boat to be moved inline with the hull or folded into a mast when not in service. Typically, a pair of outrigger structures are installed at starboard and port gunwale locations.

Known outrigger structures are often provided with a plurality of fixed eyehooks longitudinally spaced therealong. A plurality of outrigger cords are then passed through the eyehooks and a pulley assembly disposed at a fixed point on the boat. Each outrigger cord forms a displaceable loop about the pulley assembly and one or more supporting eyehooks, and each carries a clip on which a fishing line may be secured for movement along an outrigger structure with the outrigger cord. A user may retract or advance the clip by pulling the corresponding outrigger cord in one direction or the other through its loop. So when a fishing line is to be baited, the user pulls one outrigger cord to draw the clip within reach, 'loads' the clip with an appropriately baited fishing line that has been cast, then pulls the outrigger cord in a reverse direction to return the loaded clip to a deployment position on the outrigger structure. This process is repeated for each baited fishing line that has been cast out from a certain point on the boat. When a 'bite' occurs, or when a fishing line encounters sufficient tension, the clip releases, so that the line returns to form a direct line between its feeding point (i.e., fishing rod) for active user control.

This process is not without significant practical obstacles to smooth, proper operation. FIG. **7** depicts a portion of an outrigger structure **10'** having an eye hook **30'** for pivotally retaining its outrigger cords **20'**, as used in the prior art.

Normally, multiple outrigger cords **20'** are used to concurrently deploy multiple fishing lines. The multiple outrigger cords **20'** passing through the collar-like eyehook **30'** invariably bunch together during operation, getting tightly intertwined when subjected to tension and manipulation. Much friction results between the tightly packed outrigger cords **20'** themselves, as well as between each cord **20'** and eye hook **30'**. Being that the outrigger cords are normally supported snugly between the eye hook **30'** and other pivot points, a particularly high friction point is created at the sharp bend typically formed at one or more of the eye hooks **30'**. The friction makes it very difficult to displace individual outrigger cords to load and deploy their clips, at least not without mighty physical exertion. Moreover, the considerable friction that must be overcome to effect such cord movement causes premature wearing on the cords themselves.

Various outrigger structures are known in the art. By way of example, U.S. Pat. No. 3,462,870 discloses several embodiments of a fishing system that uses a buoy line maintained in a desired area by an airborne kite. The system can have a plurality of lines operated by a fisherman having a reel with a plurality of spools which may be individually wound without disturbing the others. The lines can also be operated by individual fishermen each having a reel. The individual lines may be secured to the buoy line with a releasable clip that disengages when a fish applies tension to the line, allowing that particular line to be cleared of the remaining fishing lines and to be reeled in.

U.S. Pat. No. 3,060,614 is directed to a multiple pole trolling device for mounting on a boat. The multiple pole trolling devices are spaced apart and rotatably mounted on a pole base that is rotatable and tiltably adjustable. Each of the poles has a fixed trolling line located in the water when set to a rearward position. When the assembly is rotated, the line comes out of the water over the boat so that the fish can be removed.

U.S. Pat. No. 2,196,472 is directed to a fishing apparatus in the form of a tree formed of tubular members that support a plurality of fishing lines. The tree may be thrust into the bottom of a body of water. The mast as shown has a set of screws that may be used to adjust the coaxial tubular members for use in water of different depths.

U.S. Pat. No. 3,358,399 is directed to a kite fishing apparatus having two reels, one for a kite line, and the other for a fishing line. A three-in-one glider-type structure is provided and functions to carry the fishing line over the body of water. The baited end of the fishing line is cast out by the outgoing kite line and by means provided to detachably and adjustably connect the kite line to the fishing line.

U.S. Pat. No. 4,388,774 is directed to a fishing line system for use on a boat that supports six fishing rods each spaced from the other to prevent the fishing lines from tangling during trolling. A pull on either side of the boat is mounted on roller booms that can be extended or retracted as required. A rearwardly extending pair of fishing poles are carried by holders mounted on the stern of the boat to position lines laterally inward of lines. The booms are disposed transversely to the left of the boat and are supported by antifriction assemblies which support the booms.

A significant drawback remains in the prior art for effectively managing the outrigger cords to enable loading and deploying of articles along an outrigger structure. There is, therefore, a need for a system that enables sufficiently free, unrestricted individual displacement of the outrigger cords along the outrigger structure.

SUMMARY OF THE INVENTION

It is therefore an object of the present invention to provide a line management system for an outrigger structure which maintains guiding outrigger cords in convenient, independently displaceable manner.

These and other objects are attained by the outrigger line management system formed in accordance with the present invention. The system comprises of a plurality of outrigger cords, cord management units, and retention devices. The plurality of cord management units are coupled to the outrigger structure and are longitudinally spaced one from the other along the outrigger structure. Each of the cord management units defines a plurality of transversely offset cord passages respectively guiding predetermined ones of outrigger cords to maintain an independent longitudinal displacement relative to the outrigger structure. The plurality of retention devices are each coupled to one of the outrigger cords. Each of the retention devices defines a retention point for advancing a fishing line longitudinally along the outrigger structure responsive to a displacement of the outrigger cord.

In certain exemplary embodiments, the system also includes a pivot unit laterally offset from the outrigger structure displaceably retaining each of the outrigger cords. Each of the outrigger cords extends from the pivot unit and through predetermined ones of cord management units in an endless loop.

In another exemplary embodiment, a method for managing the outrigger cords comprises the steps of (1) establishing a plurality of outrigger cords, (2) establishing a plurality of cord management positions, (3) defining each cord management positions, (4) arranging the cord management positions, and (5) establishing a plurality of retention devices. The cord management positions are established longitudinally spaced one from the other along the outrigger structure. Each of the cord management positions are then defined to include a plurality of transversely offset cord passages respectively guiding predetermined ones of the outrigger cords to maintain an independent longitudinal displacement relative to the outrigger structure. The cord management positions are arranged to define a portion of the outrigger structure a progressively decreasing number of cord passages. The retention devices are established to define a retention point for advancing a line longitudinally along the outrigger structure responsive to a displacement of the outrigger cord.

Those skilled in the art will appreciate the scope of the present invention and realize aspects thereof after reading the following detailed description of the preferred embodiments in association with the accompanying illustrative figures.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying illustrative figures incorporated in and forming a part of this specification depict several aspects of the invention, and together with the description serve to explain the principles of the invention.

FIG. **1** is a diagram illustrating a view of a line management system installed on a surface vessel in accordance with one exemplary embodiment of the present invention;

FIG. **1**A is a diagram illustrating an enlarged view of the pivot unit in the embodiment depicted in FIG. **1**;

FIG. **2** is a diagram schematically illustrating a portion of the line management system operation on an outrigger structure in accordance with an exemplary embodiment of the present invention;

FIG. **2**A is an exploded plan view of a retention device depicted in FIG. **2**;

FIG. **3** is a perspective view schematically illustrating a cord management unit formed in accordance with an exemplary embodiment of the present invention;

FIG. **3**A is a perspective view schematically illustrating a cord management unit formed in accordance with an alternate embodiment of the present invention;

FIG. **4** is a perspective view of a cord management unit formed in accordance with an alternate embodiment of the present invention;

FIG. **5** is a schematic perspective view of a cord management unit formed in accordance with another alternate embodiment of the present invention;

FIG. **6** is an exploded perspective view of a clamp member formed in accordance with another alternate embodiment of the clamp member depicted in FIG. **5**; and,

FIG. **7** is a perspective view of an eye hook employed in the prior art for guiding cords on an outrigger structure.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The embodiments set forth below represent the necessary information to enable those skilled in the art to practice the invention and illustrate the best mode of practicing the invention. In light of the illustrated figures and the following description, those skilled in the art will understand the concepts of the invention and will recognize applications of these concepts not particularly addressed herein. It should be understood that these concepts and applications fall within the scope of the disclosure and accompanying claims.

Wherever possible in the following description, similar reference numerals will refer to corresponding elements on parts of different Drawings unless otherwise indicated.

Referring to FIGS. **1** and **2**, there is a depiction of an exemplary embodiment of the line management system **1** for a surface vessel or boat **5**. The line management system **1**, installed as shown on a boat, includes a plurality of outrigger cords **20**, a plurality of cord management units **30**, and a plurality of retention devices **40** all coupled to the outrigger structure **10**. As depicted in FIG. **1**, the outrigger structure **10** may be mounted on top of a surface vessel, to the gunwale or bow, or any other suitable part of the vessel for supporting a plurality of articles therealong. System **1** may be applied to various applications to aid in the smooth loading and deployment of suitable articles to be supported along the outrigger structure **10**. The fishing application shown for illustrative purposes herein is but one of numerous such applications where system **1** may be employed in accordance with various aspects of the present invention.

In the fishing application illustrated, the outrigger structure **10** allows the deployment of more fishing lines **60** cast out from the boat each separated from the other by adequate fishing space than would normally be possible. The spacing prevents fishing lines **60** from entangling during trolling with other fishing lines **60** originating from the same boat **5**. The number of fishing lines **60** being trolled increases the chances of catching fish and permits multiple individuals to fish from the boat **5**. Use of outrigger structure **10** equipped with system **1** in accordance with the present invention mitigates the inherent entanglement risk while preserving ease of use. Each outrigger structure **10** may be suitably formed as one piece, or made up of individual outrigger sections joined together.

In accordance the present invention, a line management system **1** is coupled to each outrigger structure **10** used for support extension purposes—such as to extend support for a fishing line **60** to the side of a boat during trolling. The line management system **1** is used for safely guiding outrigger

cords **20** through cord passages to maintain an independent longitudinal displacement in order to prevent entanglement. Typically, when the outrigger structure **10** is in use, it is extended transversely to the length of a boat **5** for trolling fishing lines **60** coupled to the retention device **40**. The outrigger structure **10** thus serves to increase the span of the boat to allow more fishing lines **60** to be trolled. By way of example, a 28 foot fishing boat having a 16 foot wide fishing platform can have a pair of outrigger structures **10**, with each outrigger structure **10** being 40 foot long. Once the fishing boat **5** is ready to fish, each of the outrigger structures **10** is extended transversely from the boat in opposite directions to effectively create a 96 foot wide fishing platform from which to suspend multiple fishing lines **60**.

In one preferred embodiment, a plurality of outrigger cords **20** are supported along the longitudinal length of the outrigger structure **10** by at least one cord management unit **30**. Typically, a plurality of cord management units **30** is employed, with each cord management unit **30** firmly coupled to the outrigger structure **10**. The cord management units **30** are longitudinally spaced one from the other along the outrigger structure **10**.

Each outrigger cord **20** is coupled with a retention device **40** for securing a retention point **400** on a fishing line **60**. The retention device **40** facilitates individual management of each fishing line **60** during, for example, sport fishing. When multiple baited fishing lines **60** are being cast out from a boat **5**, the retention device **40** allows for each fishing line **60** fed from a certain point on the boat **5**, by a fishing rod **70** for instance, to be maintained without interfering with the other fishing lines **60** being trolled.

Each outrigger cord **20** is preferably looped through a pivot unit **50** spaced from an outrigger structure **10** and at least one cord management unit **30** provided on such outrigger structure **10** (as described in following paragraphs). Each outrigger cord **20** remains longitudinally displaceable relative to the outrigger structure **10** so that a user may retract or advance the retention point **400**. Each of the retention devices **40** defines a retention point **400** for pivotally supporting a fishing line. This retention point **400** is preferably displaceable longitudinally along the outrigger structure responsive to a displacement of the outrigger cord **20**. Typically, the outrigger cord **20** is displaced to retract the retention point **400** or retention device **40** when seeking to attach or manage a fishing line **60**. Once the fishing line **60** is attached to the retention device **40**, the outrigger cord **20** is then advanced by displacing the outrigger cord **20** to a relative position that gives adequate longitudinal spacing with respect to the other fishing lines **60**.

In certain embodiments, the retention device **40** pivotally retains a fishing line **60** at the retention point **400** until sufficient resistance is encountered on the line **60**. When a fish bites the line, for instance, the pull on line **60** will cause its release from the retention device **40**.

Once retracted, a user may bait, then releasably attach a fishing line **60** to a retention point **400**. When the retention point **400** is advanced back out along the given outrigger structure **10**, the retention point preferably serves as a point from which the line's baited end extends into the water. One or more fishing lines **60** may be so retained to extend in pivoted manner from a portion of each outrigger cord **20**, so long as suitable spacing is maintained to avoid undue line cluttering and tangling. In the embodiment illustrated, one retention device **40** is shown connected to each individual cord **20**.

As depicted in FIG. **2**, the outrigger cords **20** are individually coupled to a stop cork **80** that acts to limit the displacement of the outrigger cords past a predetermined point. The stop cork **80** limits the displacement by preventing the retention device **40** from unintentionally getting wedged in the cord management unit **30**.

In the preferred embodiment, the line management system **1** also includes a pivot unit **50** preferably anchored to a fixed point on the boat **5**, laterally offset from the outrigger structure **10** for displaceably retaining a portion of each outrigger cord **20**. The pivot unit **50** acts as a pivotal support about which the outrigger cords **20** may be displaced. Each of the outrigger cords **20** extends from the pivot unit **50** and through respective cord management units **30**, preferably in an endless loop.

In an exemplary embodiment, the pivot unit **50** includes a plurality of rotatable members **500** individually receiving a respective outrigger cord **20**. However, the pivot unit **50** is not limited to a rotatable structure and may be any structure of suitable type to provide a pivot support for displacement of the outrigger cords **20**.

Each retention device **40**, as depicted in FIG. **2**A, is coupled to an outrigger cord **20** and used to transport an intermediate portion of a fishing line **60** relative to outrigger structure **10**. Among other things, the retention device **40** comprises of a clip portion **402** and retention point **400**. The clip portion **402** allows for the free release of the line **60** when the line is caused to apply sufficient resistance pressure thereon.

When multiple fishing lines **60** are being trolled in the water, in the illustrated embodiment, the lines **60** are preferably maintained by system **1** in such a way that each fishing line **60** clears every other fishing line **60** on its way back towards its feed point (such as the corresponding fishing pole **70**) upon released from the clip portion **402**. The originating/feed points of the fishing lines **60** are suitably arranged, so that when one fishing line **60** releases from its retention device **40**, the fishing line **60** does not physically contact or otherwise interfere with the other deployed fishing lines **60** on its return to a direct line extension from the originating point. It is not unusual to have the retention devices **40** coupled to respective outrigger cords **20** to be displaced in height 8 feet relative to each other, to ensure a clear path of return as a direct line from the feed point (to the water) is restored by a released fishing line **60**.

In a typical application, one end of a fishing line **60** may be fed to originate from a fishing rod **70** temporarily secured to a support bracket provided on the boat **5**. A distal end **600** is baited and drawn in the water during trolling. The retention point **400** is located between the originating end and distal end **600** of the fishing line. The retention point **400** provides a pivot point from which the distal portion (having the end **600**) of the fishing line **60** may be suspended from the outrigger structure **10** for safe trolling. The clip portion **402**, which may be made of any suitably resilient or rigid material having enough structural strength to hold the fishing line **60** in place, is configured to open when there is tension on the fishing line **60**. For example, when a fish takes the bait at the distal end **600** of the fishing line **60** and causes sufficient tension thereon, the clip portion **402** of the retention device **40** will release. Thereafter, the fishing line **60** must be re-loaded onto the retention device **40** if that line is to be deployed again at its trolling position.

To re-couple fishing line **60** (to re-load a retention device **40**), the particular outrigger cord **20** for the clip portion **402** that released the fishing line **60** is pulled to draw the retention device **40**/clip portion **402** back in towards the boat until it is within a user's reach. The clip portion **402** is re-loaded by coupling a newly-baited fishing line **60**. Once the retention device **40** is drawn in for re-coupling, the clip portion **402**

may be snapped open or pulled away from the retention device **40** to an open position so that the fishing line **60** may be hooked by the retention point **400**. Thereafter, the retention device **40** is advanced outward again by accordingly displacing its outrigger cord **20**. In accordance with one aspect of the present invention, the outrigger cords **20** are independently maintained along respective transversely offset cord passages **304** as described in following paragraphs, such that each may be freely displaced, and the longitudinal displacement of any of the outrigger cords **20** will not interfere with the rest of the outrigger cords **20**.

As depicted in FIG. **3**, the line management system **1** also includes at least one a cord management unit **30** for each cord **20**. In broad concept, the cord management unit **30** defines a plurality of transversely offset cord passages **304** which independently guide the outrigger cords **20** longitudinally along the outrigger structure **10**. The cord management unit **30** allows for multiple outrigger cords **20** to be independently controlled without undue interference from the other outrigger cords **20**.

Each cord management unit **30** preferably includes independently displaceable pulley members **300** to engage respective outrigger cords **20**. In the disclosed embodiment, the pulley members **300** are made wheel-like to be freely rotatable. Since each pulley member **300** is freely rotatable and exposed to the weather elements on the boat, suitable measures may be necessary to weatherize said pulley members **300**, depending on the specific requirements of a particular application. For example, the pulley members **300** may be suitably sealed. Preferably, the pulley members **300** are made of composite, wood, metal, or other such material having enough strength and resilience to withstand the environmental elements, friction, and forces that the members would be typically subjected to during use.

The pulley members **300** define transversely offset cord passages **304** whose concave profiles are directed radially outward to receive and guide respective outrigger cords **20**, and maintain their independent longitudinal displacement relative to the outrigger structure **10**. The transversely offset cord passages **304** may are formed with annular grooves **310** having, for example U-shaped or V-shaped sectional profiles. The annular grooves **310** are configured to provide lateral support and containment sufficient to avoid slippage of the outrigger cords **20** therefrom.

In preferred embodiments, a plurality of cord management units **30** are arranged along a length of each outrigger structure **10**, so that decreasing numbers of transversely offset cord passages **304** are provided by successive unit **30**. For example, a system **1** configured to support three separate outrigger cords **20***a*, **20***b*, **20***c* on an outrigger structure **10**, as illustrated in FIG. **2**, would employ with the pivot unit **50** four cord management units **30***a*, **30***b*, **30***c*, **30***d*. The cord management units **30***a*-**30***d* are then arranged to define, along a portion of the outrigger structure **10**, a progressively decreasing number of cord passages **304**.

In the embodiment illustrated in FIG. **2**, for example, the first two cord management units **30***a*, **30***b* closest to the boat **5**, would preferably each define three cord passages **304** to participate in guiding all three outrigger cords **20***a*, **20***b*, **20***c*. The third cord management unit **30***c* would preferably define one less cord passage, or two cord passages **304**, to participate in guiding just two of the outrigger cords **20***b*, **20***c*, since the first outrigger cord **20***a* pivots at the second cord management unit **30***b* to return to the pivot unit **50**. The next cord management unit **30***d* may then define even fewer cord passages, or one cord passage **304** in this case, to participate in guiding the one remaining outrigger cords **20***c*, since the first outrigger cord **20***b* pivots at the third cord management unit **30***c* to return to the pivot unit **50**.

In certain alternate embodiments, of course, the number of cord management units **30**, as well as the arrangement and extent of cord passages defined by respective cord management units **30**, may be varied to suit the particular requirements of the intended applications. While not the most efficient, for example, each outrigger cord **20** may be looped about the pivot unit **50** and a set of cord management units **30** whose cord passages pass that outrigger cord **20** only, to the exclusion of the other outrigger cords **20**. Each cord management unit might then need to define but one cord passage, but measures would be required to ensure that the cord passages of one cord management unit set (for a given cord **20**) are maintained in sufficiently transversely offset manner from the cord passages defined by an adjacent set of such units (for another cord **20**) to avoid interfering contact.

In certain other alternate embodiments, one or more of the cord management units **30** may be of modular configuration to facilitate flexible adaptation to different applications. For example, individual pulley member modules **300** may be disposed in replaceable manner within the housing **306** of a cord management unit **30**, such that numbers and even the precise positions of the individual pulley or other members **300** within the unit **30** may be adjustably varied to suit different needs. Suitable measures would then be employed to enable such individual replacement of a pulley member module **30**, or its re-positioning, within the housing **306**.

In preferred embodiments, the pulley members **300** are coaxially aligned, sharing the same shaft. The outrigger cords **20** are secured in the cord passages **304** by a bridge member **302**. Preferably, the bridge member **302** is reconfigurably coupled to a housing **306** structure to contain the plurality of outrigger cords **20** in one position and allow their removal in another. The housing **306** is suitably formed to provide structural support and containment for the pulley members **300** and the outrigger cords **20**. In the embodiment of FIG. **3**, the bridge member **302** is displaceable relative to the pulley members **300** about a hinged coupling between the first and second positions. The first and second positions represent open and closed positions respectively. The plurality of cord management units **30** are longitudinally spaced along the outrigger structure **10** and their housings **306** releasably fastened by clamp member **308**. The clamp member **308** may be sleeved onto the outrigger structure **10**, selectively positioned on the outrigger structure **10**, and fastened by a bolt, snap, strap, fire tie, cable, or other such suitable fastening measures known in the art. The fasteners serve to secure the clamp member **308** to the outrigger structure **10** to prevent the cord management unit **30** from being unintentionally displaced relative to the outrigger structure **10**.

FIG. **3**A is an alternate embodiment of the line management system **1** depicted in FIG. **3**. The line management system **1** also includes at least one a cord management unit **30** for each cord **20**. In broad concept, the cord management unit **30** defines a plurality of transversely offset cord passages **304** which independently guide the outrigger cords **20** longitudinally along the outrigger structure **10**. The cord management unit **30** allows for multiple outrigger cords **20** to be independently controlled without undue interference from the other outrigger cords **20**.

Each cord management unit **30** preferably includes independently displaceable pulley members **300** to engage respective outrigger cords **20**. In the disclosed embodiment, the pulley members **300** are made wheel-like to be freely rotatable. Since each pulley member **300** is freely rotatable

and exposed to the weather elements on the boat, suitable measures may be necessary to weatherize said pulley members **300**, depending on the specific requirements of a particular application. For example, the pulley members **300** may be suitably sealed. Preferably, the pulley members **300** are made of composite, wood, metal, or other such material having enough strength and resilience to withstand the environmental elements, friction, and forces that the members would be typically subjected to during use.

The pulley members **300** define transversely offset cord passages **304** whose concave profiles are directed radially outward to receive and guide respective outrigger cords **20**, and maintain their independent longitudinal displacement relative to the outrigger structure **10**. The transversely offset cord passages **304** may are formed with annular grooves **310** having, for example U-shaped or V-shaped sectional profiles. The annular grooves **310** are configured to provide lateral support and containment sufficient to avoid slippage of the outrigger cords **20** therefrom.

In preferred embodiments, a plurality of cord management units **30** are arranged along a length of each outrigger structure **10**, so that decreasing numbers of transversely offset cord passages **304** are provided by successive unit **30**. For example, a system **1** configured to support three separate outrigger cords **20***a*, **20***b*, **20***c* on an outrigger structure **10**, as illustrated in FIG. **2**, would employ with the pivot unit **50** four cord management units **30***a*, **30***b*, **30***c*, **30***d*. The cord management units **30***a*-**30***d* are then arranged to define, along a portion of the outrigger structure **10**, a progressively decreasing number of cord passages **304**.

In the embodiment illustrated in FIG. **2**, for example, the first two cord management units **30***a*, **30***b* closest to the boat **5**, would preferably each define three cord passages **304** to participate in guiding all three outrigger cords **20***a*, **20***b*, **20***c*. The third cord management unit **30***c* would preferably define one less cord passage, or two cord passages **304**, to participate in guiding just two of the outrigger cords **20***b*, **20***c*, since the first outrigger cord **20***a* pivots at the second cord management unit **30***b* to return to the pivot unit **50**. The next cord management unit **30***d* may then define even fewer cord passages, or one cord passage **304** in this case, to participate in guiding the one remaining outrigger cords **20***c*, since the first outrigger cord **20***b* pivots at the third cord management unit **30***c* to return to the pivot unit **50**.

In certain alternate embodiments, of course, the number of cord management units **30**, as well as the arrangement and extent of cord passages defined by respective cord management units **30**, may be varied to suit the particular requirements of the intended applications. While not the most efficient, for example, each outrigger cord **20** may be looped about the pivot unit **50** and a set of cord management units **30** whose cord passages pass that outrigger cord **20** only, to the exclusion of the other outrigger cords **20**. Each cord management unit might then need to define but one cord passage, but measures would be required to ensure that the cord passages of one cord management unit set (for a given cord **20**) are maintained in sufficiently transversely offset manner from the cord passages defined by an adjacent set of such units (for another cord **20**) to avoid interfering contact.

In certain other alternate embodiments, one or more of the cord management units **30** may be of modular configuration to facilitate flexible adaptation to different applications. For example, individual pulley member modules **300** may be disposed in replaceable manner within the housing **306** of a cord management unit **30**, such that numbers and even the precise positions of the individual pulley or other members **300** within the unit **30** may be adjustably varied to suit different needs. Suitable measures would then be employed to enable such individual replacement of a pulley member module **30**, or its re-positioning, within the housing **306**.

In preferred embodiments, the pulley members **300** are coaxially aligned, sharing the same shaft. The outrigger cords **20** are secured in the cord passages **304** by a bridge member **302**. Preferably, the bridge member **302** is reconfigurably coupled to a housing **306** structure to contain the plurality of outrigger cords **20** in one position and allow their removal in another. The housing **306** is suitably formed to provide structural support and containment for the pulley members **300** and the outrigger cords **20**. In the embodiment of FIG. **3**, the bridge member **302** is displaceable relative to the pulley members **300** about a hinged coupling between the first and second positions. The first and second positions represent open and closed positions respectively.

In this embodiment, the housing **306** is coupled to the outrigger structure **10** by a coupling member **309** that is secured by a securing member **311**. The coupling member **309** may be a bolt, snap, strap, fire tie, cable, or other such suitable fastening measures known in the art. The coupling member **309** serve to secure the housing **306** to the outrigger structure **10** to prevent the cord management unit **30** from being unintentionally displaced relative to the outrigger structure **10**.

The plurality of cord management units **30** are longitudinally spaced along the outrigger structure **10** and their housings **306** releasably fastened by coupling member **309** that is secured by a securing member **311**. The coupling member **309** may be a bolt, snap, strap, fire tie, cable, or other such suitable fastening measures known in the art. The coupling member **309** serve to secure the housing **306** to the outrigger structure **10** to prevent the cord management unit **30** from being unintentionally displaced relative to the outrigger structure **10**.

In certain alternate embodiments, such as depicted in FIG. **4**, the cord management unit **30** may include a spool-like structure that is integrally formed with a plurality of grooves **310** for receiving respective outrigger cords **20**. The cord passages **304** defined within the grooves **310** may be formed of materials with a very low friction coefficient so as to allow individual outrigger cords **20** to smoothly glide along them when displaced. Among other things, the low friction material making up the cord passage **304** in this embodiment would obviate the need for independent pulley members **300** as depicted in FIG. **3**. However, this embodiment has the drawback of generating more friction between the outrigger cords **20** and the respective receiving grooves **310**.

FIG. **5** depicts another alternate embodiment of cord management unit **30**. In this embodiment, the independently displaceable pulley members **300** define cord passages **304** that are laterally offset one from the other to respectively guide outrigger cords **20** to maintain independent longitudinal displacement relative to the outrigger structure. The independent pulley members **300** are respectively coupled to individual shafts which allow independent rotation of each pulley member **300**. Each bridge member **302** is provided as shown to guard against unwanted release of a cord **20** from its pulley member **300**, and thereby retain the outrigger cords **20** operably engaged with the pulley members **300**.

With respect to FIG. **6**, there is shown an alternate embodiment of clamp member **308**. In this embodiment, the clamp member **308** is made up of two separate pieces contoured to conform and easily fasten to the given outrigger structure **10**. The clamp member **308** may be releasably fastened by clamping the separate pieces about the outrigger structure **10** and securing the same with a fastener. The fastener may be a bolt,

snap, strap, fire tie, or any other suitable means for fastening the collar-like clamp member **308** pieces to the outrigger structure **10**.

The clamping/fastening measures shown in the illustrated embodiments enable each cord management unit **30** to be retrofitted to existing outrigger structures **10**. The clamp member **308** may be sleeved onto the outrigger structure **10** or releasably fastened by a suitable fastener. Alternatively, where requirements permit, one or more cord management units **30** may also be formed as a fixed or integral part of an outrigger structure **10** itself.

The application of the cord management system **1** of the present inventions is not limited necessarily to fishing. Its use is relevant in any application that requires an outrigger structure, on or off water, where effective management of outrigger cords **20** is necessary to realize the benefits of the structure. For example, system **1** may be employed to set and deploy traps, set and service instrument buoys, or otherwise facilitate the outrigger-aided use and deployment of various other such articles.

The illustrated embodiments implement a method for managing the outrigger cords which generally includes the steps of: (1) establishing a plurality of outrigger cords **20**, (2) establishing a plurality of cord management positions, (3) defining at each cord management position a plurality of transversely offset cord passages **304**, (4) arranging the cord management positions, and (5) establishing a plurality of retention devices **40**. The cord management positions are established longitudinally spaced one from the other along the outrigger structure **10**. A plurality of transversely offset cord passages **304** are defined at certain of the cord management positions to respectively guide predetermined ones of the outrigger cords **20** to maintain independent longitudinal displacement relative to the outrigger structure **10**. The cord management positions **304** are arranged to define along at least a portion of the outrigger structure **10** a progressively decreasing number of cord passages **304**. The retention devices **40** are thereby established to each define a retention point **400** for advancing a line longitudinally along the outrigger structure **10** responsive to a displacement of the outrigger cord **20**.

Although this invention has been described in connection with specific forms and embodiments thereof, it will be appreciated that various modifications other than those discussed above may be resorted to without departing from the spirit or scope of the invention as defined in the appended claims. For example, functionally equivalent elements may be substituted for those specifically shown and described, certain features may be used independently of other features, and in certain cases, particular locations of the elements as well as particular method steps may be reversed or interposed, all without departing from the spirit or scope of the invention as defined in the appended claims.

What is claimed is:

1. A line management system for a surface vessel, comprising:

an outrigger structure;

a plurality of outrigger cords;

a plurality of cord management units coupled to the outrigger structure, said cord management units being longitudinally spaced one from the other along the outrigger structure, each of said cord management units defining a plurality of cord passages transversely offset one from the other, said cord passages respectively guiding predetermined ones of said outrigger cords to extend substantially in parallel to the outrigger structure so as to extend through respective ones of said cord passages of at least two of said plurality of cord management units and remain independently displaceable longitudinally relative to the outrigger structure; and

a plurality of retention devices, each of said retention devices coupled to one of said outrigger cords, each of said retention devices defining a retention point for advancing a line longitudinally along the outrigger structure responsive to displacement of said one of said outrigger cords.

2. The line management system as recited in claim **1**, wherein at least one of said cord management units includes a plurality of independently displaceable pulley members each engaging one of said outrigger cords.

3. The line management system as recited in claim **2**, wherein said at least one of said cord management units further includes at least one bridge member displaceable relative to said pulley members between first and second positions, said at least one bridge member in said first position retaining the engagement of at least one of said outrigger cords with a corresponding one of said pulley members.

4. The line management system as recited in claim **2**, wherein said pulley members of said at least one of said cord management units are coaxially disposed one relative to the other.

5. The line management system as recited in claim **1**, wherein at least one of said cord management units is releasably fastened to the outrigger structure.

6. The line management system as recited in claim **5**, wherein said at least one cord of said management units includes a housing and a clamp member detachably coupled thereto.

7. The line management system as recited in claim **1**, wherein each of said retention devices includes a clip portion for releasably retaining a line and a stop cork.

8. The line management system as recited in claim **1**, wherein said cord passages of each of said cord management units comprise a plurality of grooves with each of said grooves receiving one of said outrigger cords.

9. An outrigger cord management system for a surface vessel, comprising:

an outrigger structure;

a plurality of outrigger cords;

a plurality of cord management units coupled to the outrigger structure, said cord management units being longitudinally spaced one from the other along the outrigger structure, each of said cord management units defining a plurality of cord passages transversely offset one from the other, said cord passages respectively receiving predetermined ones of said outrigger cords to maintain independent longitudinal displacement thereof relative to the outrigger structure;

at least one pivot unit laterally offset from the outrigger structure, said at least one pivot unit displaceably retaining each of said outrigger cords, each of said outrigger cords extending from said at least one pivot unit and through predetermined ones of said cord management units in an endless loop; and,

a plurality of retention devices, each of said retention devices coupled to one of said outrigger cords, each of said retention devices defining a retention point for advancing a line longitudinally along the outrigger structure responsive to displacement of said one of said outrigger cords.

10. The outrigger cord management system as recited in claim **9**, wherein each of said cord management units includes a plurality of independently displaceable pulley members each engaging one of said outrigger cords.

11. The outrigger cord management system as recited in claim **10**, wherein said pulley members of each of said cord management units are coaxially disposed one relative to the other.

12. The outrigger cord management system as recited in claim **11**, wherein each of said cord management units further includes a housing supporting said pulley members, and at least one bridge member coupled to said housing for displacement between first and second positions, said at least one bridge member in said first position retaining the engagement of at least one of said outrigger cords with a corresponding one of said pulley members.

13. The outrigger cord management system as recited in claim **12**, wherein each of said cord management units is releasably fastened to the outrigger structure, and each of said cord management units further includes a clamp member detachably coupled thereto.

14. The outrigger cord management system as recited in claim **10**, wherein said at least one pivot unit includes a plurality of rotatable members receiving said outrigger cords respectively thereabout.

15. The outrigger cord management system as recited in claim **9**, wherein said cord passages of each of said cord management units comprise a plurality of grooves with each of said grooves receiving one of said outrigger cords.

16. A line management system for a surface vessel, comprising:

an outrigger structure;

a plurality of outrigger cords;

a plurality of cord management units coupled to the outrigger structure, said cord management units being longitudinally spaced one from the other along the outrigger structure, each of said cord management units defining a plurality of cord passages transversely offset one from the other, said cord passages respectively guiding predetermined ones of said outrigger cords to maintain independent longitudinal displacement thereof relative to the outrigger structure, wherein at least one of said cord management units includes a plurality of independently displaceable pulley members each engaging one of said outrigger cords;

a plurality of retention devices, each of said retention devices coupled to one of said outrigger cords, each of said retention devices defining a retention point for advancing a line longitudinally along the outrigger structure responsive to displacement of said one of said outrigger cords; and,

at least one pivot point unit laterally offset from the outrigger structure, said at least one pivot unit displaceably retaining each of said outrigger cords, each of said outrigger cords extending from said at least one pivot unit and through predetermined ones of said cord management units in an endless loop.

17. The line management system as recited in claim **16**, wherein said at least one pivot unit includes a plurality of rotatable members receiving said outrigger cords respectively thereabout.

* * * * *

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(12) EX PARTE REEXAMINATION CERTIFICATE (10925th)

United States Patent
Mercier

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(45) **Certificate Issued: Aug. 23, 2016**

(54) **OUTRIGGER LINE MANAGEMENT SYSTEM**

(76) Inventor: **Craig Mercier**, Harmans, MD (US)

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B63B 21/10	(2006.01)

(52) **U.S. Cl.**
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(58) **Field of Classification Search**
None
See application file for complete search history.

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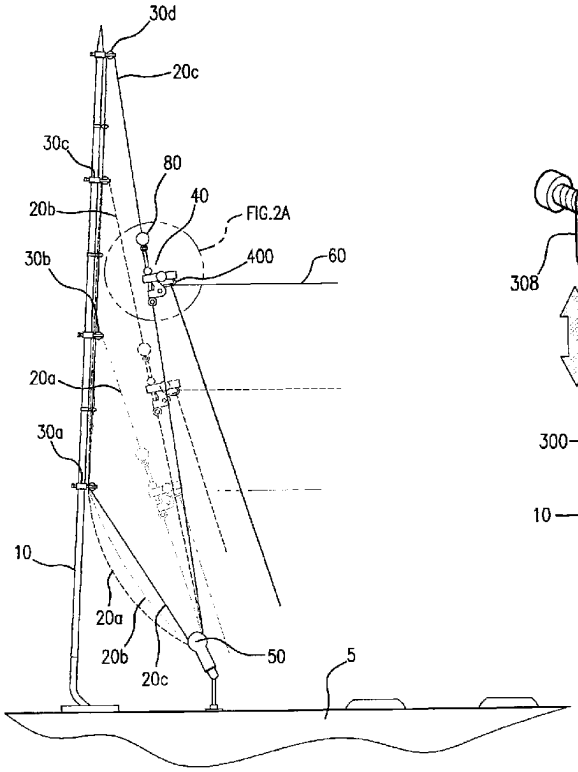
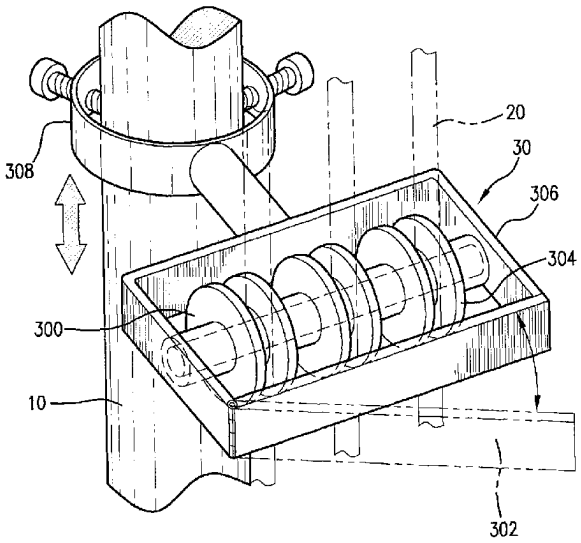
To view the complete listing of prior art documents cited during the proceeding for Reexamination Control Number 90/013,594, please refer to the USPTO's public Patent Application Information Retrieval (PAIR) system under the Display References tab.

Primary Examiner — Joseph Kaufman

(57) **ABSTRACT**

A line management system for an outrigger structure is provided for guiding outrigger cords through cord passages to maintain an independent longitudinal displacement in order to prevent entanglement. The system includes a plurality of outrigger cords, cord management units, and retention devices. The plurality of cord management units are coupled to the outrigger structure and are longitudinally spaced one from the other along the outrigger structure. Each of the cord management units defines a plurality of transversely offset cord passages respectively guiding predetermined ones of outrigger cords to maintain an independent longitudinal displacement relative to the outrigger structure.





EX PARTE REEXAMINATION CERTIFICATE

THE PATENT IS HEREBY AMENDED AS INDICATED BELOW.

Matter enclosed in heavy brackets [ ] appeared in the patent, but has been deleted and is no longer a part of the patent; matter printed in italics indicates additions made to the patent.

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **6**, **9**, **12** and **16** are determined to be patentable as amended.

Claims **2-5**, **7**, **8**, **10**, **11**, **13-15** and **17**, dependent on an amended claim, are determined to be patentable.

1. A line management system for a surface vessel, comprising:

an outrigger structure;

a plurality of outrigger cords;

a plurality of cord management units coupled to the outrigger structure, said cord management units being longitudinally spaced one from the other along the outrigger structure, *each of said cord management units including a housing secured by at least one fastener against displacement relative to the outrigger structure,* each of said cord management units defining *and maintaining* a plurality of cord passages transversely offset one from the other, said cord passages respectively guiding predetermined ones of said outrigger cords to extend substantially in parallel to the outrigger structure **[**so as to extend**]**, *said outrigger cords thereby extending* through respective ones of said cord passages of at least two of said plurality of cord management units and **[**remain**]** *remaining* independently displaceable longitudinally relative to the outrigger structure; and

a plurality of retention devices, each of said retention devices coupled to one of said outrigger cords, each of said retention devices defining a retention point for advancing a line longitudinally along the outrigger structure responsive to displacement of said one of said outrigger cords.

6. The line management system as recited in claim **5**, wherein said at least one **[**cord**]** of said *cord* management units includes **[**a housing and**]** a clamp member detachably coupled **[**thereto**]** *to said housing*.

9. An outrigger cord management system for a surface vessel, comprising:

an outrigger structure;

a plurality of outrigger cords;

a plurality of cord management units coupled to the outrigger structure, said cord management units being longitudinally spaced one from the other along the outrigger structure, *each of said cord management units including a housing secured by at least one fastener against displacement relative to the outrigger structure,* each of said cord management units defining a plurality of cord passages transversely offset one from the other, said cord passages respectively receiving predetermined ones of said outrigger cords to maintain independent longitudinal displacement thereof relative to the outrigger structure;

at least one pivot unit laterally offset from the outrigger structure, said at least one pivot unit displaceably retaining each of said outrigger cords, each of said outrigger cords extending from said at least one pivot unit and through predetermined ones of said cord management units in an endless loop; and,

a plurality of retention devices, each of said retention devices coupled to one of said outrigger cords, each of said retention devices defining a retention point for advancing a line longitudinally along the outrigger structure responsive to displacement of said one of said outrigger cords.

12. The outrigger cord management system as recited in claim **11**, wherein each of said cord management units further includes **[**a**]** *said* housing supporting said pulley members, and at least one bridge member coupled to said housing for displacement between first and second positions, said at least one bridge member in said first position retaining the engagement of at least one of said outrigger cords with a corresponding one of said pulley members.

16. A line management system for a surface vessel, comprising:

an outrigger structure;

a plurality of outrigger cords;

a plurality of cord management units coupled to the outrigger structure, said cord management units being longitudinally spaced one from the other along the outrigger structure, *each of said cord management units including a housing secured by at least one fastener against displacement relative to the outrigger structure,* each of said cord management units defining a plurality of cord passages transversely offset one from the other, said cord passages respectively guiding predetermined ones of said outrigger cords to maintain independent longitudinal displacement thereof relative to the outrigger structure, wherein at least one of said cord management units includes a plurality of independently displaceable pulley members each engaging one of said outrigger cords;

a plurality of retention devices, each of said retention devices coupled to one of said outrigger cords, each of said retention devices defining a retention point for advancing a line longitudinally along the outrigger structure responsive to displacement of said one of said outrigger cords; and,

at least one pivot point unit laterally offset from the outrigger structure, said at least one pivot unit displaceably retaining each of said outrigger cords, each of said outrigger cords extending from said at least one pivot unit and through predetermined ones of said cord management units in an endless loop.

* * * * *

EXHIBIT B

US009392778B1

(12) **United States Patent**
Mercier

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(45) **Date of Patent: Jul. 19, 2016**

(54) **OUTRIGGER LINE MANAGEMENT SYSTEM**

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(72) Inventor: **Craig Mercier**, Harmans, MD (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **14/188,180**

(22) Filed: **Feb. 24, 2014**

Related U.S. Application Data

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A01K 91/18	(2006.01)
A01K 99/00	(2006.01)

(52) **U.S. Cl.**
CPC ***A01K 79/00*** (2013.01); ***A01K 91/053*** (2013.01); ***A01K 91/18*** (2013.01); ***A01K 99/00*** (2013.01); ***B63B 35/14*** (2013.01)

(58) **Field of Classification Search**
CPC A01K 91/053; A01K 91/08; A01K 91/18; A01K 79/00; A01K 99/00
USPC 43/27.4, 43.12, 43.13, 42.74, 27.2, 43/21.2, 4.5; 114/255, 364; 211/119.01, 211/119.02, 119.03, 119.1, 119.11, 119.12, 211/119.13, 119.14
See application file for complete search history.

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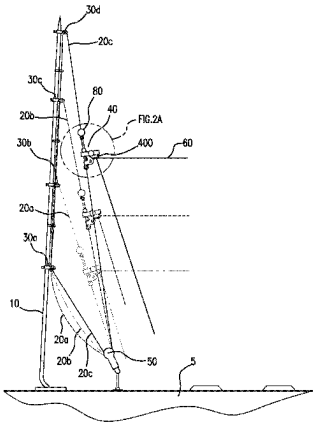
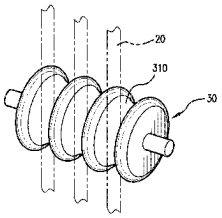
(74) *Attorney, Agent, or Firm* — Rosenberg, Klein & Lee

(57) **ABSTRACT**

A line management system for an outrigger structure is provided for guiding outrigger cords through cord passages to maintain an independent longitudinal displacement in order to prevent entanglement. The system includes a plurality of outrigger cords, cord management units, and retention devices. The plurality of cord management units are coupled to the outrigger structure and are longitudinally spaced one from the other along the outrigger structure. Each of the cord management units defines a plurality of transversely offset cord passages respectively guiding predetermined ones of outrigger cords to maintain an independent longitudinal displacement relative to the outrigger structure.

20 Claims, 6 Drawing Sheets





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through an article on p. 8 describing the J-Mar Outrigger System. A photocopy of the front of the magazine and the article on p. 8 of the magazine as presented on Oct. 21, 2015 to applicant in related U.S. Appl. No. 90/013,594.

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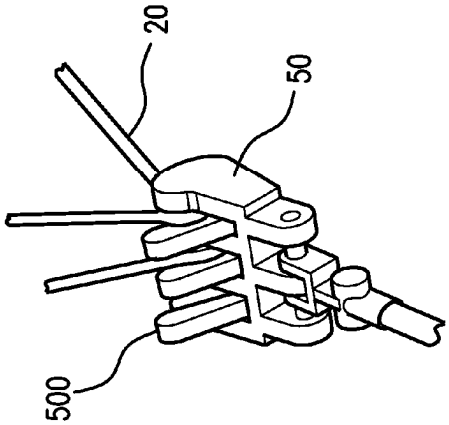

FIG. 1A

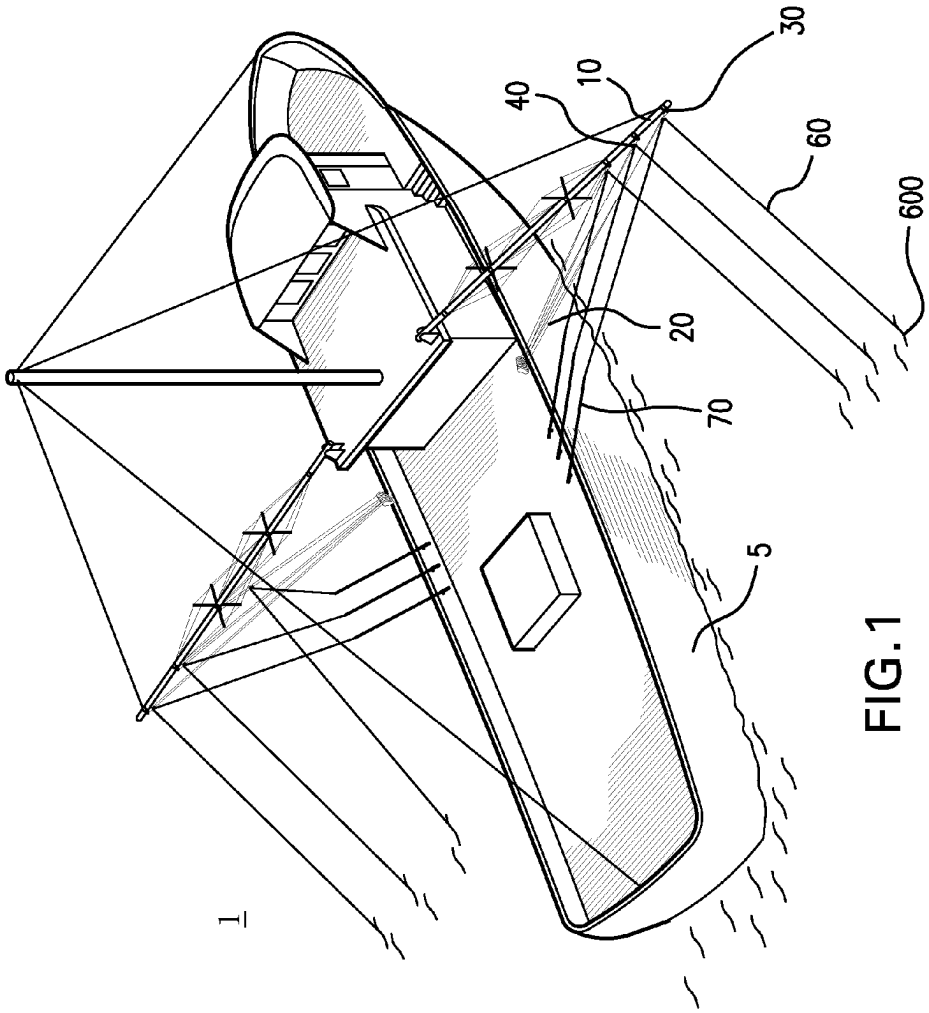

FIG. 1

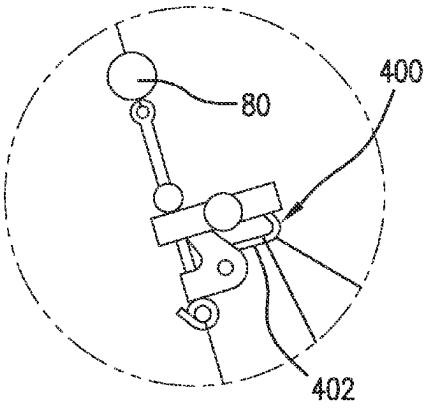
400
80
402

FIG.2A

30d
20c
30c
80
40
20b
FIG.2A
400
60
30b
20a
30a
10
20a
20b
20c
50
5

FIG.2

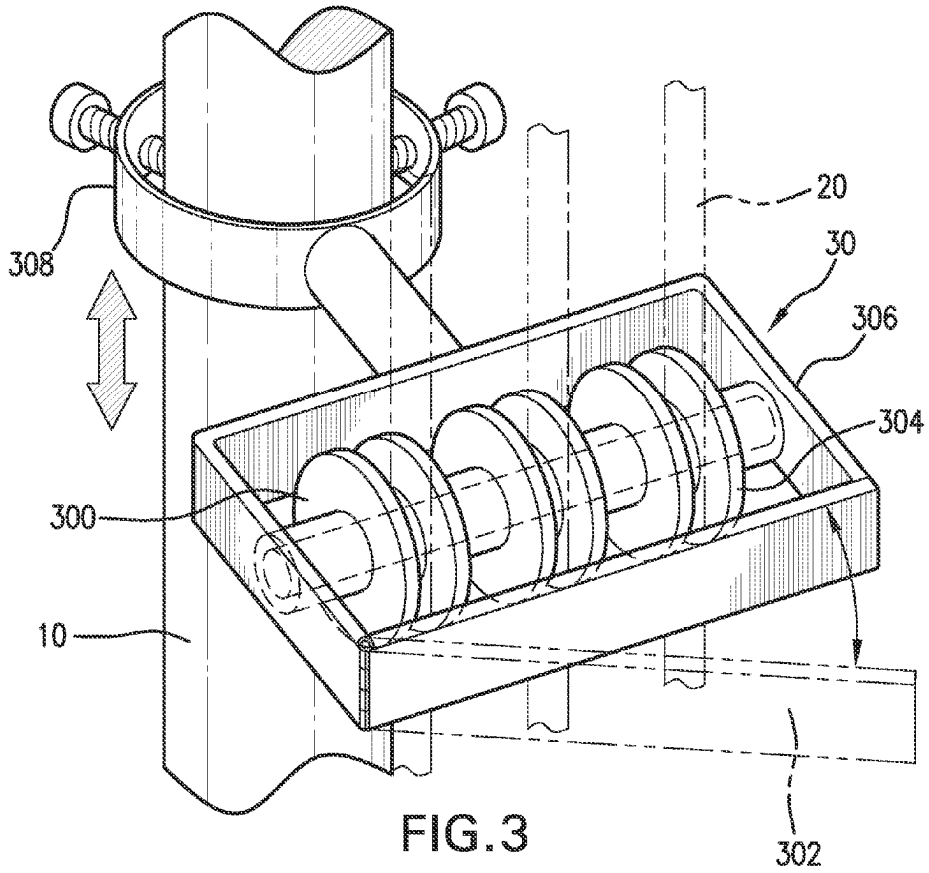

FIG.3

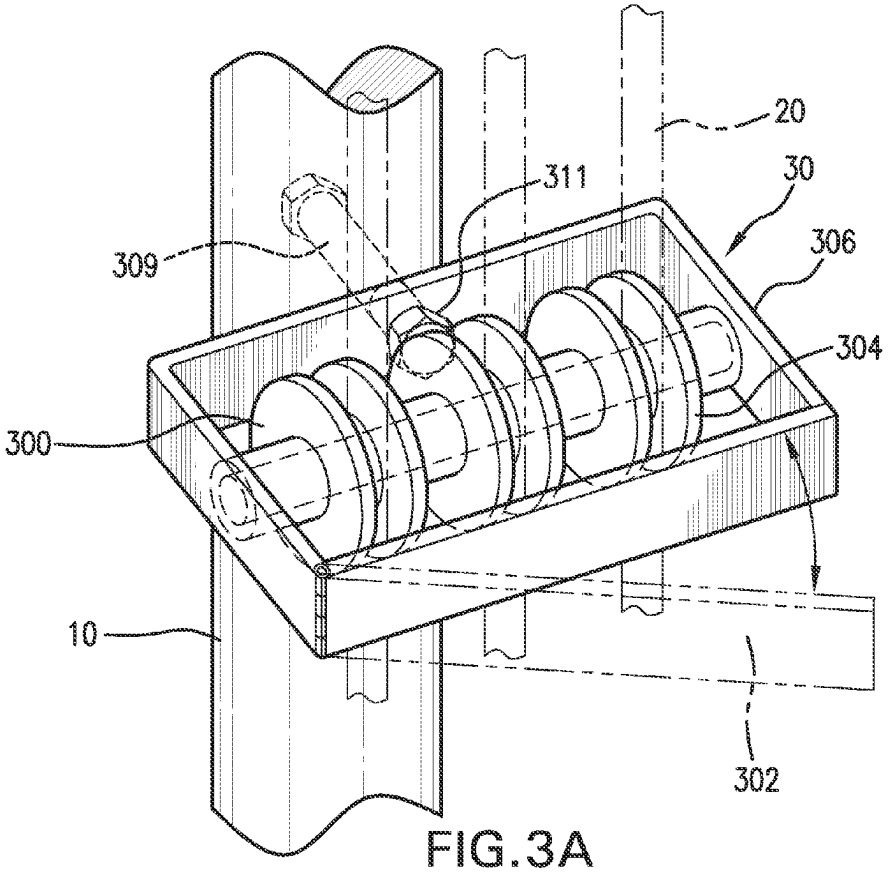

FIG.3A

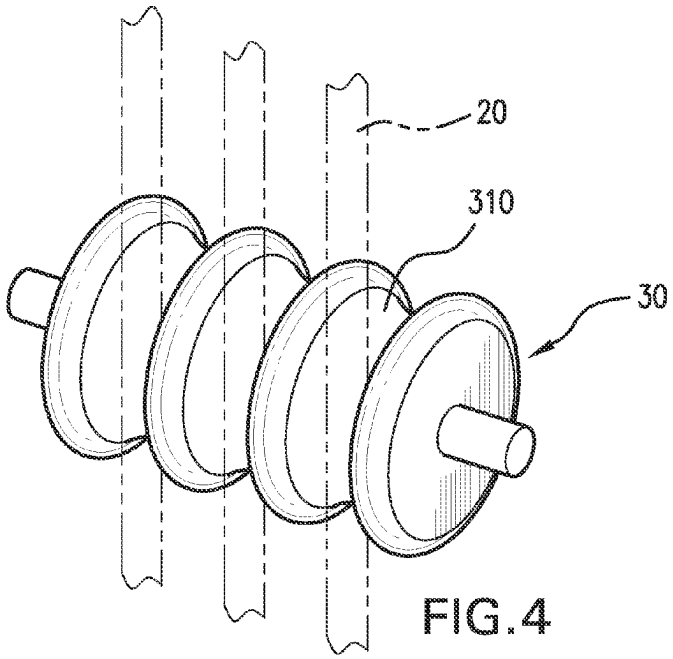

FIG.4

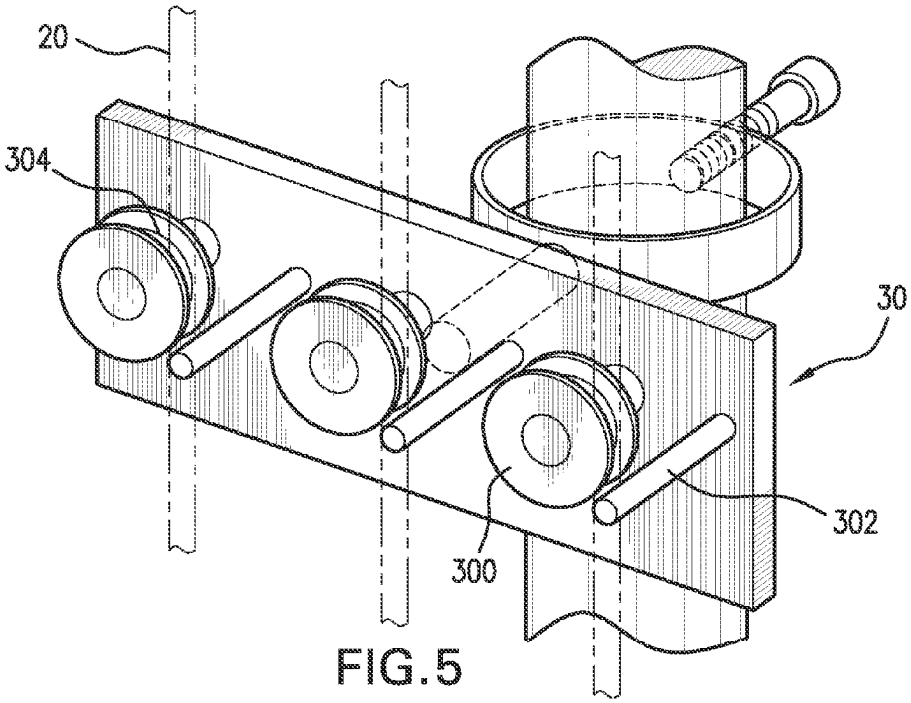

FIG.5

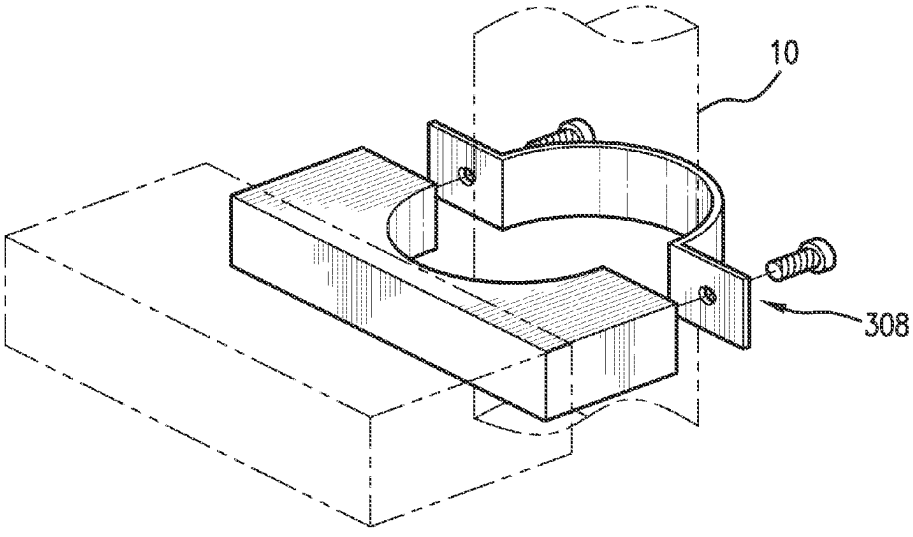

FIG.6

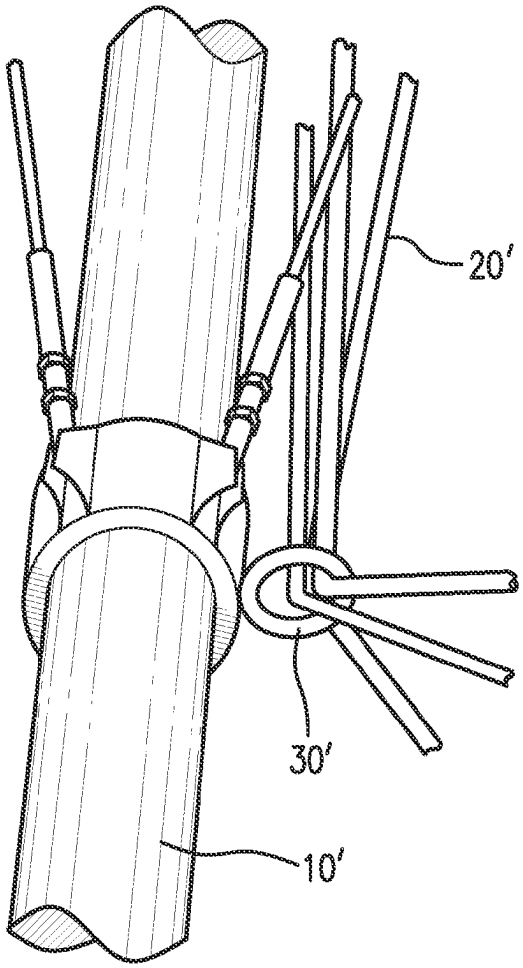

FIG. 7

OUTRIGGER LINE MANAGEMENT SYSTEM

RELATED APPLICATIONS

This application is a Divisional patent application of co-pending application Ser. No. 12/726,695, filed on 18 Mar. 2010, now pending. The entire disclosure of the prior application Ser. No. 12/726,695, from which an oath or declaration is supplied, is considered a part of the disclosure of the accompanying Divisional application and is hereby incorporated by reference.

BACKGROUND OF THE INVENTION

The subject outrigger line management system is generally directed to a system for enabling convenient displacement of articles along an outrigger structure. More specifically, the outrigger line management system maintains smooth and efficient displacement of individual lines, cords, or other mechanical link employed to so displace articles along a given outrigger support structure.

Outrigger structures are used on surface vessels to extend the lateral reach of the vessel for various purposes. Cast line fishing applications provide one example where outrigger structures provide useful extension of support points for concurrent use of multiple fishing lines. Typically, a fishing rod feeds a fishing line on which one or more baited hooks are provided. The baited ends of the fishing lines are cast into the water to attract fish about the given boat or other surface vessel. Where more than a few fishing lines are so cast from the same vessel into surrounding waters, inter-tangling remains a persistent problem, particularly where the vessel continues moving to, for example, troll the lines through the water. Tangling becomes an even greater threat when the vessel undergoes abrupt turns or encounters fast moving currents. To prevent such interference and tangling, fishing lines may be supported through one or more pivot points displaced along the length of an outrigger structure. The baited ends of different fishing lines are thereby spaced to be dragged through the water, each held safely away from the vessel and one another to avoid interference.

In this manner, outrigger support structures extend fishing/trolling lines laterally out beyond the wake of a moving boat. They allow the safe deployment of multiple fishing lines cast out from the boat each pivoted at different points along the outrigger structure to remain separated by sufficient fishing space (until release of the lines from their pivot points is triggered) to prevent entanglement.

Outrigger structures are usually installed on a boat to be moved inline with the hull or folded into a mast when not in service. Typically, a pair of outrigger structures are installed at starboard and port gunwale locations.

Known outrigger structures are often provided with a plurality of fixed eyehooks longitudinally spaced therealong. A plurality of outrigger cords are then passed through the eyehooks and a pulley assembly disposed at a fixed point on the boat. Each outrigger cord forms a displaceable loop about the pulley assembly and one or more supporting eyehooks, and each carries a clip on which a fishing line may be secured for movement along an outrigger structure with the outrigger cord. A user may retract or advance the clip by pulling the corresponding outrigger cord in one direction or the other through its loop. So when a fishing line is to be baited, the user pulls one outrigger cord to draw the clip within reach, 'loads' the clip with an appropriately baited fishing line that has been cast, then pulls the outrigger cord in a reverse direction to return the loaded clip to a deployment position on the outrigger structure. This process is repeated for each baited fishing line that has been cast out from a certain point on the boat. When a 'bite' occurs, or when a fishing line encounters sufficient tension, the clip releases, so that the line returns to form a direct line between its feeding point fishing rod) for active user control.

This process is not without significant practical obstacles to smooth, proper operation. FIG. **7** depicts a portion of an outrigger structure **10'** having an eye hook **30'** for pivotally retaining its outrigger cords **20'**, as used in the prior art. Normally, multiple outrigger cords **20'** are used to concurrently deploy multiple fishing lines. The multiple outrigger cords **20'** passing through the collar-like eyehook **30'** invariably bunch together during operation, getting tightly intertwined when subjected to tension and manipulation. Much friction results between the tightly packed outrigger cords **20'** themselves, as well as between each cord **20'** and eye hook **30'**. Being that the outrigger cords are normally supported snugly between the eye hook **30'** and other pivot points, a particularly high friction point is created at the sharp bend typically formed at one or more of the eye hooks **30'**. The friction makes it very difficult to displace individual outrigger cords to load and deploy their clips, at least not without mighty physical exertion. Moreover, the considerable friction that must be overcome to effect such cord movement causes premature wearing on the cords themselves.

Various outrigger structures are known in the art. By way of example, U.S. Pat. No. 3,462,870 discloses several embodiments of a fishing system that uses a buoy line maintained in a desired area by an airborne kite. The system can have a plurality of lines operated by a fisherman having a reel with a plurality of spools which may be individually wound without disturbing the others. The lines can also be operated by individual fishermen each having a reel. The individual lines may be secured to the buoy line with a releasable clip that disengages when a fish applies tension to the line, allowing that particular line to be cleared of the remaining fishing lines and to be reeled in.

U.S. Pat. No. 3,060,614 is directed to a multiple pole trolling device for mounting on a boat. The multiple pole trolling devices are spaced apart and rotatably mounted on a pole base that is rotatable and tiltably adjustable. Each of the poles has a fixed trolling line located in the water when set to a rearward position. When the assembly is rotated, the line comes out of the water over the boat so that the fish can be removed.

U.S. Pat. No. 2,196,472 is directed to a fishing apparatus in the form of a tree formed of tubular members that support a plurality of fishing lines. The tree may be thrust into the bottom of a body of water. The mast as shown has a set of screws that may be used to adjust the coaxial tubular members for use in water of different depths.

U.S. Pat. No. 3,358,399 is directed to a kite fishing apparatus having two reels, one for a kite line, and the other for a fishing line. A three-in-one glider-type structure is provided and functions to carry the fishing line over the body of water. The baited end of the fishing line is cast out by the outgoing kite line and by means provided to detachably and adjustably connect the kite line to the fishing line.

U.S. Pat. No. 4,388,774 is directed to a fishing line system for use on a boat that supports six fishing rods each spaced from the other to prevent the fishing lines from during trolling. A pull on either side of the boat is mounted on roller booms that can be extended or retracted as required. A rearwardly extending pair of fishing poles are carried by holders mounted on the stern of the boat to position lines laterally

inward of lines. The booms are disposed transversely to the left of the boat and are supported by antifriction assemblies which support the booms.

A significant drawback remains in the prior art for effectively managing the outrigger cords to enable loading and deploying of articles along an outrigger structure. There is, therefore, a need for a system that enables sufficiently free, unrestricted individual displacement of the outrigger cords along the outrigger structure.

SUMMARY OF THE INVENTION

It is therefore an object of the present invention to provide a line management system for an outrigger structure which maintains guiding outrigger cords in convenient, independently displaceable manner.

These and other objects are attained by the outrigger line management system formed in accordance with the present invention. The system comprises of a plurality of outrigger cords, cord management units, and retention devices. The plurality of cord management units are coupled to the outrigger structure and are longitudinally spaced one from the other along the outrigger structure. Each of the cord management units defines a plurality of transversely offset cord passages respectively guiding predetermined ones of outrigger cords to maintain an independent longitudinal displacement relative to the outrigger structure. The plurality of retention devices are each coupled to one of the outrigger cords. Each of the retention devices defines a retention point for advancing a fishing line longitudinally along the outrigger structure responsive to a displacement of the outrigger cord.

In certain exemplary embodiments, the system also includes a pivot unit laterally offset from the outrigger structure displaceably retaining each of the outrigger cords. Each of the outrigger cords extends from the pivot unit and through predetermined ones of cord management units in an endless loop.

In another exemplary embodiment, a method for managing the outrigger cords comprises the steps of (1) establishing a plurality of outrigger cords, (2) establishing a plurality of cord management positions, (3) defining each cord management positions, (4) arranging the cord management positions, and (5) establishing a plurality of retention devices. The cord management positions are established longitudinally spaced one from the other along the outrigger structure. Each of the cord management positions are then defined to include a plurality of transversely offset cord passages respectively guiding predetermined ones of the outrigger cords to maintain an independent longitudinal displacement relative to the outrigger structure. The cord management positions are arranged to define a portion of the outrigger structure a progressively decreasing number of cord passages. The retention devices are established to define a retention point for advancing a line longitudinally along the outrigger structure responsive to a displacement of the outrigger cord.

Those skilled in the art will appreciate the scope of the present invention and realize aspects thereof after reading the following detailed description of the preferred embodiments in association with the accompanying illustrative figures.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying illustrative figures incorporated in and forming a part of this specification depict several aspects of the invention, and together with the description serve to explain the principles of the invention.

FIG. **1** is a diagram illustrating a view of a line management system installed on a surface vessel in accordance with one exemplary embodiment of the present invention;

FIG. **1**A is a diagram illustrating an enlarged view of the pivot unit in the embodiment depicted in FIG. **1**;

FIG. **2** is a diagram schematically illustrating a portion of the line management system operation on an outrigger structure in accordance with an exemplary embodiment of the present invention;

FIG. **2**A is an exploded plan view of a retention device depicted in FIG. **2**;

FIG. **3** is a perspective view schematically illustrating a cord management unit formed in accordance with an exemplary embodiment of the present invention;

FIG. **3**A is a perspective view schematically illustrating a cord management unit formed in accordance with an alternate embodiment of the present invention;

FIG. **4** is a perspective view of a cord management unit formed in accordance with an alternate embodiment of the present invention;

FIG. **5** is a schematic perspective view of a cord management unit formed in accordance with another alternate embodiment of the present invention;

FIG. **6** is an exploded perspective view of a clamp member formed in accordance with another alternate embodiment of the clamp member depicted in FIG. **5**; and,

FIG. **7** is a perspective view of an eye hook employed in the prior art for guiding cords on an outrigger structure.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The embodiments set forth below represent the necessary information to enable those skilled in the art to practice the invention and illustrate the best mode of practicing the invention. In light of the illustrated figures and the following description, those skilled in the art will understand the concepts of the invention and will recognize applications of these concepts not particularly addressed herein. It should be understood that these concepts and applications fall within the scope of the disclosure and accompanying claims.

Wherever possible in the following description, similar reference numerals will refer to corresponding elements on parts of different Drawings unless otherwise indicated.

Referring to FIGS. **1** and **2**, there is a depiction of an exemplary embodiment of the line management system **1** for a surface vessel or boat **5**. The line management system **1**, installed as shown on a boat, includes a plurality of outrigger cords **20**, a plurality of cord management units **30**, and a plurality of retention devices **40** all coupled to the outrigger structure **10**. As depicted in FIG. **1**, the outrigger structure **10** may be mounted on top of a surface vessel, to the gunwale or bow, or any other suitable part of the vessel for supporting a plurality of articles therealong. System **1** may be applied to various applications to aid in the smooth loading and deployment of suitable articles to be supported along the outrigger structure **10**. The fishing application shown for illustrative purposes herein is but one of numerous such applications where system **1** may be employed in accordance with various aspects of the present invention.

In the fishing application illustrated, the outrigger structure **10** allows the deployment of more fishing lines **60** cast out from the boat each separated from the other by adequate fishing space than would normally be possible. The spacing prevents fishing lines **60** from entangling during trolling with other fishing lines **60** originating from the same boat **5**. The number of fishing lines **60** being trolled increases the chances

of catching fish and permits multiple individuals to fish from the boat **5**. Use of outrigger structure **10** equipped with system **1** in accordance with the present invention mitigates the inherent entanglement risk while preserving ease of use. Each outrigger structure **10** may be suitably formed as one piece, or made up of individual outrigger sections joined together.

In accordance the present invention, a line management system **1** is coupled to each outrigger structure **10** used for support extension purposes—such as to extend support for a fishing line **60** to the side of a boat during trolling. The line management system **1** is used for safely guiding outrigger cords **20** through cord passages to maintain an independent longitudinal displacement in order to prevent entanglement. Typically, when the outrigger structure **10** is in use, it is extended transversely to the length of a boat **5** for trolling fishing lines **60** coupled to the retention device **40**. The outrigger structure **10** thus serves to increase the span of the boat to allow more fishing lines **60** to be trolled. By way of example, a 28 foot fishing boat having a 16 foot wide fishing platform can have a pair of outrigger structures **10**, with each outrigger structure **10** being 40 foot long. Once the fishing boat **5** is ready to fish, each of the outrigger structures **10** is extended transversely from the boat in opposite directions to effectively create a 96 foot wide fishing platform from which to suspend multiple fishing lines **60**.

In one preferred embodiment, a plurality of outrigger cords **20** are supported along the longitudinal length of the outrigger structure **10** by at least one cord management unit **30**. Typically, a plurality of cord management units **30** is employed, with each cord management unit **30** firmly coupled to the outrigger structure **10**. The cord management units **30** are longitudinally spaced one from the other along the outrigger structure **10**.

Each outrigger cord **20** is coupled with a retention device **40** for securing a retention point **400** on a fishing line **60**. The retention device **40** facilitates individual management of each fishing line **60** during, for example, sport fishing. When multiple baited fishing lines **60** are being cast out from a boat **5**, the retention device **40** allows for each fishing line **60** fed from a certain point on the boat **5**, by a fishing rod **70** for instance, to be maintained without interfering with the other fishing lines **60** being trolled.

Each outrigger cord **20** is preferably looped through a pivot unit **50** spaced from an outrigger structure **10** and at least one cord management unit **30** provided on such outrigger structure **10** (as described in following paragraphs). Each outrigger cord **20** remains longitudinally displaceable relative to the outrigger structure **10** so that a user may retract or advance the retention point **400**. Each of the retention devices **40** defines a retention point **400** for pivotally supporting a fishing line. This retention point **400** is preferably displaceable longitudinally along the outrigger structure responsive to a displacement of the outrigger cord **20**. Typically, the outrigger cord **20** is displaced to retract the retention point **400** or retention device **40** when seeking to attach or manage a fishing line **60**. Once the fishing line **60** is attached to the retention device **40**, the outrigger cord **20** is then advanced by displacing the outrigger cord **20** to a relative position that gives adequate longitudinal spacing with respect to the other fishing lines **60**.

In certain embodiments, the retention device **40** pivotally retains a fishing line **60** at the retention point **400** until sufficient resistance is encountered on the line **60**. When a fish bites the line, for instance, the pull on line **60** will cause its release from the retention device **40**.

Once retracted, a user may bait, then releasably attach a fishing line **60** to a retention point **400**. When the retention point **400** is advanced back out along the given outrigger structure **10**, the retention point preferably serves as a point from which the line's baited end extends into the water. One or more fishing lines **60** may be so retained to extend in pivoted manner from a portion of each outrigger cord **20**, so long as suitable spacing is maintained to avoid undue line cluttering and tangling. In the embodiment illustrated, one retention device **40** is shown connected to each individual cord **20**.

As depicted in FIG. **2**, the outrigger cords **20** are individually coupled to a stop cork **80** that acts to limit the displacement of the outrigger cords past a predetermined point. The stop cork **80** limits the displacement by preventing the retention device **40** from unintentionally getting wedged in the cord management unit **30**.

In the preferred embodiment, the line management system **1** also includes a pivot unit **50** preferably anchored to a fixed point on the boat **5**, laterally offset from the outrigger structure **10** for displaceably retaining a portion of each outrigger cord **20**. The pivot unit **50** acts as a pivotal support about which the outrigger cords **20** may be displaced. Each of the outrigger cords **20** extends from the pivot unit **50** and through respective cord management units **30**, preferably in an endless loop.

In an exemplary embodiment, the pivot unit **50** includes a plurality of rotatable members **500** individually receiving a respective outrigger cord **20**. However, the pivot unit **50** is not limited to a rotatable structure and may be any structure of suitable type to provide a pivot support for displacement of the outrigger cords **20**.

Each retention device **40**, as depicted in FIG. **2**A, is coupled to an outrigger cord **20** and used to transport an intermediate portion of a fishing line **60** relative to outrigger structure **10**. Among other things, the retention device **40** comprises of a clip portion **402** and retention point **400**. The clip portion **402** allows for the free release of the line **60** when the line is caused to apply sufficient resistance pressure thereon.

When multiple fishing lines **60** are being trolled in the water, in the illustrated embodiment, the lines **60** are preferably maintained by system **1** in such a way that each fishing line **60** clears every other fishing line **60** on its way back towards its feed point (such as the corresponding fishing pole **70**) upon released from the clip portion **402**. The originating/feed points of the fishing lines **60** are suitably arranged, so that when one fishing line **60** releases from its retention device **40**, the fishing line **60** does not physically contact or otherwise interfere with the other deployed fishing lines **60** on its return to a direct line extension from the originating point. It is not unusual to have the retention devices **40** coupled to respective outrigger cords **20** to be displaced in height 8 feet relative to each other, to ensure a clear path of return as a direct line from the feed point (to the water) is restored by a released fishing line **60**.

In a typical application, one end of a fishing line **60** may be fed to originate from a fishing rod **70** temporarily secured to a support bracket provided on the boat **5**. A distal end **600** is baited and drawn in the water during trolling. The retention point **400** is located between the originating end and distal end **600** of the fishing line. The retention point **400** provides a pivot point from which the distal portion (having the end **600**) of the fishing line **60** may be suspended from the outrigger structure **10** for safe trolling. The clip portion **402**, which may be made of any suitably resilient or rigid material having enough structural strength to hold the fishing line **60** in place, is configured to open when there is tension on the fishing line **60**. For example, when a fish takes the bait at the distal end **600** of the fishing line **60** and causes sufficient

tension thereon, the clip portion **402** of the retention device **40** will release. Thereafter, the fishing line **60** must be re-loaded onto the retention device **40** if that line is to be deployed again at its trolling position.

To re-couple fishing line **60** (to re-load a retention device **40**), the particular outrigger cord **20** for the clip portion **402** that released the fishing line **60** is pulled to draw the retention device **40**/clip portion **402** back in towards the boat until it is within a user's reach. The clip portion **402** is re-loaded by coupling a newly-baited fishing line **60**. Once the retention device **40** is drawn in for re-coupling, the clip portion **402** may be snapped open or pulled away from the retention device **40** to an open position so that the fishing line **60** may be hooked by the retention point **400**. Thereafter, the retention device **40** is advanced outward again by accordingly displacing its outrigger cord **20**. In accordance with one aspect of the present invention, the outrigger cords **20** are independently maintained along respective transversely offset cord passages **304** as described in following paragraphs, such that each may be freely displaced, and the longitudinal displacement of any of the outrigger cords **20** will not interfere with the rest of the outrigger cords **20**.

As depicted in FIG. **3**, the line management system **1** also includes at least one a cord management unit **30** for each cord **20**. In broad concept, the cord management unit **30** defines a plurality of transversely offset cord passages **304** which independently guide the outrigger cords **20** longitudinally along the outrigger structure **10**. The cord management unit **30** allows for multiple outrigger cords **20** to be independently controlled without undue interference from the other outrigger cords **20**.

Each cord management unit **30** preferably includes independently displaceable pulley members **300** to engage respective outrigger cords **20**. In the disclosed embodiment, the pulley members **300** are made wheel-like to be freely rotatable. Since each pulley member **300** is freely rotatable and exposed to the weather elements on the boat, suitable measures may be necessary to weatherize said pulley members **300**, depending on the specific requirements of a particular application. For example, the pulley members **300** may be suitably sealed. Preferably, the pulley members **300** are made of composite, wood, metal, or other such material having enough strength and resilience to withstand the environmental elements, friction, and forces that the members would be typically subjected to during use.

The pulley members **300** define transversely offset cord passages **304** whose concave profiles are directed radially outward to receive and guide respective outrigger cords **20**, and maintain their independent longitudinal displacement relative to the outrigger structure **10**. The transversely offset cord passages **304** may are formed with annular grooves **310** having, example shaped or V-shaped sectional profiles. The annular grooves **310** are configured to provide lateral support and containment sufficient to avoid slippage of the outrigger cords **20** therefrom.

In preferred embodiments, a plurality of cord management units **30** are arranged along a length of each outrigger structure **10**, so that decreasing numbers of transversely offset cord passages **304** are provided by successive unit **30**. For example, a system **1** configured to support three separate outrigger cords **20***a*, **20***b*, **20***c* on an outrigger structure **10**, as illustrated in FIG. **2**, would employ with the pivot unit **50** four cord management units **30***a*, **30***b*, **30***c*, **30***d*. The cord management units **30***a*-**30***d* are then arranged to define, along a portion of the outrigger structure **10**, a progressively decreasing number of cord passages **304**.

In the embodiment illustrated in FIG. **2**, for example, the first two cord management units **30***a*, **30***b* closest to the boat **5**, would preferably each define three cord passages **304** to participate in guiding all three outrigger cords **20***a*, **20***b*, **20***c*. The third cord management unit **30***c* would preferably define one less cord passage, or two cord passages **304**, to participate in guiding just two of the outrigger cords **20***b*, **20***e*, since the first outrigger cord **20***a* pivots at the second cord management unit **30***b* to return to the pivot unit **50**. The next cord management unit **30***d* may then define even fewer cord passages, or one cord passage **304** in this case, to participate in guiding the one remaining outrigger cords **20***c*, since the first outrigger cord **20***b* pivots at the third cord management unit **30***c* to return to the pivot unit **50**.

In certain alternate embodiments, of course, the number of cord management units **30**, as well as the arrangement and extent of cord passages defined by respective cord management units **30**, may be varied to suit the particular requirements of the intended applications. While not the most efficient, for example, each outrigger cord **20** may be looped about the pivot unit **50** and a set of cord management units **30** whose cord passages pass that outrigger cord **20** only, to the exclusion of the other outrigger cords **20**. Each cord management unit might then need to define but one cord passage, but measures would be required to ensure that the cord passages of one cord management unit set (for a given cord **20**) are maintained in sufficiently transversely offset manner from the cord passages defined by an adjacent set of such units (for another cord **20**) to avoid interfering contact.

In certain other alternate embodiments, one or more of the cord management units **30** may be of modular configuration to facilitate flexible adaptation to different applications. For example, individual pulley member modules **300** may be disposed in replaceable manner within the housing **306** of a cord management unit **30**, such that numbers and even the precise positions of the individual pulley or other members **300** within the unit **30** may be adjustably varied to suit different needs. Suitable measures would then be employed to enable such individual replacement of a pulley member module **30**, or its re-positioning, within the housing **306**.

In preferred embodiments, the pulley members **300** are coaxially aligned, sharing the same shaft. The outrigger cords **20** are secured in the cord passages **304** by a bridge member **302**. Preferably, the bridge member **302** is reconfigurably coupled to a housing **306** structure to contain the plurality of outrigger cords **20** in one position and allow their removal in another. The housing **306** is suitably formed to provide structural support and containment for the pulley members **300** and the outrigger cords **20**. In the embodiment of FIG. **3**, the bridge member **302** is displaceable relative to the pulley members **300** about a hinged coupling between the first and second positions. The first and second positions represent open and closed positions respectively. The plurality of cord management units **30** are longitudinally spaced along the outrigger structure **10** and their housings **306** releasably fastened by clamp member **308**. The clamp member **308** may be sleeved onto the outrigger structure **10**, selectively positioned on the outrigger structure **10**, and fastened by a bolt, snap, strap, fire tie, cable, or other such suitable fastening measures known in the art. The fasteners serve to secure the clamp member **308** to the outrigger structure **10** to prevent the cord management unit **30** from being unintentionally displaced relative to the outrigger structure **10**.

FIG. **3**A is an alternate embodiment of the line management system **1** depicted in FIG. **3**. The line management system **1** also includes at least one a cord management unit **30** for each cord **20**. In broad concept, the cord management unit

30 defines a plurality of transversely offset cord passages **304** which independently guide the outrigger cords **20** longitudinally along the outrigger structure **10**. The cord management unit **30** allows for multiple outrigger cords **20** to be independently controlled without undue interference from the other outrigger cords **20**.

Each cord management unit **30** preferably includes independently displaceable pulley members **300** to engage respective outrigger cords **20**. In the disclosed embodiment, the pulley members **300** are made wheel-like to be freely rotatable. Since each pulley member **300** is freely rotatable and exposed to the weather elements on the boat, suitable measures may be necessary to weatherize said pulley members **300**, depending on the specific requirements of a particular application. For example, the pulley members **300** may be suitably sealed. Preferably, the pulley members **300** are made of composite, wood, metal, or other such material having enough strength and resilience to withstand the environmental elements, friction, and forces that the members would be typically subjected to during use.

The pulley members **300** define transversely offset cord passages **304** whose concave profiles are directed radially outward to receive and guide respective outrigger cords **20**, and maintain their independent longitudinal displacement relative to the outrigger structure **10**. The transversely offset cord passages **304** may are formed with annular grooves **310** having, for example U-shaped or V-shaped sectional profiles. The annular grooves **310** are configured to provide lateral support and containment sufficient to avoid slippage of the outrigger cords **20** therefrom.

In preferred embodiments, a plurality of cord management units **30** are arranged along a length of each outrigger structure **10**, so that decreasing numbers of transversely offset cord passages **304** are provided by successive unit **30**. For example, a system **1** configured to support three separate outrigger cords **20***a*, **20***b*, **20***c* on an outrigger structure **10**, as illustrated in FIG. **2**, would employ with the pivot unit **50** four cord management units **30***a*, **30***b*, **30***c*, **30***d*. The cord management units **30***a*-**30***d* are then arranged to define, along a portion of the outrigger structure **10**, a progressively decreasing number of cord passages **304**.

In the embodiment illustrated in FIG. **2**, for example, the first two cord management units **30***a*, **30***b* closest to the boat **5**, would preferably each define three cord passages **304** to participate in guiding all three outrigger cords **20***a*, **20***b*, **20***e*. The third cord management unit **30***e* would preferably define one less cord passage, or two cord passages **304**, to participate in guiding just two of the outrigger cords **20***b*, **20***c*, since the first outrigger cord **20***a* pivots at the second cord management unit **30***b* to return to the pivot unit **50**. The next cord management unit **30***d* may then define even fewer cord passages, or one cord passage **304** in this case, to participate in guiding the one remaining outrigger cords **20***c*, since the first outrigger cord **20***b* pivots at the third cord management unit **30***e* to return to the pivot unit **50**.

In certain alternate embodiments, of course, the number of cord management units **30**, as well as the arrangement and extent of cord passages defined by respective cord management units **30**, may be varied to suit the particular requirements of the intended applications. While not the most efficient, for example, each outrigger cord **20** may be looped about the pivot unit **50** and a set of cord management units **30** whose cord passages pass that outrigger cord **20** only, to the exclusion of the other outrigger cords **20**. Each cord management unit might then need to define but one cord passage, but measures would be required to ensure that the cord passages of one cord management unit set (for a given cord **20**) are maintained in sufficiently transversely offset manner from the cord passages defined by an adjacent set of such units (for another cord **20**) to avoid interfering contact.

In certain other alternate embodiments, one or more of the cord management units **30** may be of modular configuration to facilitate flexible adaptation to different applications. For example, individual pulley member modules **300** may be disposed in replaceable manner within the housing **306** of a cord management unit **30**, such that numbers and even the precise positions of the individual pulley or other members **300** within the unit **30** may be adjustably varied to suit different needs. Suitable measures would then be employed to enable such individual replacement of a pulley member module **30**, or its re-positioning, within the housing **306**.

In preferred embodiments, the pulley members **300** are coaxially aligned, sharing the same shaft. The outrigger cords **20** are secured in the cord passages **304** by a bridge member **302**. Preferably, the bridge member **302** is reconfigurably coupled to a housing **306** structure to contain the plurality of outrigger cords **20** in one position and allow their removal in another. The housing **306** is suitably formed to provide structural support and containment for the pulley members **300** and the outrigger cords **20**. In the embodiment of FIG. **3**, the bridge member **302** is displaceable relative to the pulley members **300** about a hinged coupling between the first and second positions. The first and second positions represent open and closed positions respectively.

In this embodiment, the housing **306** is coupled to the outrigger structure **10** by a coupling member **309** that is secured by a securing member **311**. The coupling member **309** may be a bolt, snap, strap, fire tie, cable, or other such suitable fastening measures known in the art. The coupling member **309** serve to secure the housing **306** to the outrigger structure **10** to prevent the cord management unit **30** from being unintentionally displaced relative to the outrigger structure **10**.

The plurality of cord management units **30** are longitudinally spaced along the outrigger structure **10** and their housings **306** releasably fastened by coupling member **309** that is secured by a securing member **311**. The coupling member **309** may be a bolt, snap, strap, fire tie, cable, or other such suitable fastening measures known in the art. The coupling member **309** serve to secure the housing **306** to the outrigger structure **10** to prevent the cord management unit **30** from being unintentionally displaced relative to the outrigger structure **10**.

In certain alternate embodiments, such as depicted in FIG. **4**, the cord management unit **30** may include a spool-like structure that is integrally formed with a plurality of grooves **310** for receiving respective outrigger cords **20**. The cord passages **304** defined within the grooves **310** may be formed of materials with a very low friction coefficient so as to allow individual outrigger cords **20** to smoothly glide along them when displaced. Among other things, the low friction material making up the cord passage **304** in this embodiment would obviate the need for independent pulley members **300** as depicted in FIG. **3**. However, this embodiment has the drawback of generating more friction between the outrigger cords **20** and the respective receiving grooves **310**.

FIG. **5** depicts another alternate embodiment of cord management unit **30**. In this embodiment, the independently displaceable pulley members **300** define cord passages **304** that are laterally offset one from the other to respectively guide outrigger cords **20** to maintain independent longitudinal displacement relative to the outrigger structure. The independent pulley members **300** are respectively coupled to individual shafts which allow independent rotation of each pulley mem-

ber **300**. Each bridge member **302** is provided as shown to guard against unwanted release of a cord **20** from its pulley member **300**, and thereby retain the outrigger cords **20** operably engaged with the pulley members **300**.

With respect to FIG. **6**, there is shown an alternate embodiment of clamp member **308**. In this embodiment, the clamp member **308** is made up of two separate pieces contoured to conform and easily fasten to the given outrigger structure **10**. The clamp member **308** may be releasably fastened by clamping the separate pieces about the outrigger structure **10** and securing the same with a fastener. The fastener may be a bolt, snap, strap, fire tie, or any other suitable means for fastening the collar-like clamp member **308** pieces to the outrigger structure **10**.

The clamping/fastening measures shown in the illustrated embodiments enable each cord management unit **30** to be retrofitted to existing outrigger structures **10**. The clamp member **308** may be sleeved onto the outrigger structure **10** or releasably fastened by a suitable fastener. Alternatively, where requirements permit, one or more cord management units **30** may also be formed as a fixed or integral part of an outrigger structure **10** itself.

The application of the cord management system **1** of the present inventions is not limited necessarily to fishing. Its use is relevant in any application that requires an outrigger structure, on or off water, where effective management of outrigger cords **20** is necessary to realize the benefits of the structure. For example, system **1** may be employed to set and deploy traps, set and service instrument buoys, or otherwise facilitate the outrigger-aided use and deployment of various other such articles.

The illustrated embodiments implement a method for managing the outrigger cords which generally includes the steps of: (1) establishing a plurality of outrigger cords **20**, (2) establishing a plurality of cord management positions, (3) defining at each cord management position a plurality of transversely offset cord passages **304**, (4) arranging the cord management positions, and (5) establishing a plurality of retention devices **40**. The cord management positions are established longitudinally spaced one from the other along the outrigger structure **10**. A plurality of transversely offset cord passages **304** are defined at certain of the cord management positions to respectively guide predetermined ones of the outrigger cords **20** to maintain independent longitudinal displacement relative to the outrigger structure **10**. The cord management positions **304** are arranged to define along at least a portion of the outrigger structure **10** a progressively decreasing number of cord passages **304**. The retention devices **40** are thereby established to each define a retention point **400** for advancing a line longitudinally along the outrigger structure **10** responsive to a displacement of the outrigger cord **20**.

Although this invention has been described in connection with specific forms and embodiments thereof, it will be appreciated that various modifications other than those discussed above may be resorted to without departing from the spirit or scope of the invention as defined in the appended claims. For example, functionally equivalent elements may be substituted for those specifically shown and described, certain features may be used independently of other features, and in certain cases, particular locations of the elements as well as particular method steps may be reversed or interposed, all without departing from the spirit or scope of the invention as defined in the appended claims.

What is claimed is:

1. A method of managing outrigger cords for a surface vessel having an outrigger structure, comprising:

establishing a plurality of outrigger cords;

establishing a plurality of cord management positions longitudinally spaced one from the other along at least a portion of the outrigger structure;

defining at each of said cord management positions within the portion of the outrigger structure a plurality of cord passages transversely offset one from the other, said cord passages respectively guiding predetermined ones of said outrigger cords to maintain independent longitudinal displacement thereof relative to the outrigger structure, and retaining said cord management positions such that the cord passages extend at fixed angular orientations relative to the outrigger structure;

arranging said cord management positions along the portion of the outrigger structure with consecutive cord management positions within the portion of the outrigger structure respectively guiding a progressively decreasing number of outrigger cords; and,

establishing a plurality of retention devices, each of said retention devices coupled to one of said outrigger cords to define a retention point for advancing a line longitudinally along the outrigger structure responsive to displacement of said one of said outrigger cords.

2. The method as recited in claim **1**, further comprising establishing for each said cord a pivot point laterally offset from the outrigger structure, each said outrigger cord being displaceably retained by said pivot point to extend from said pivot point and through predetermined ones of said cord management positions in an endless loop.

3. The method as recited in claim **1**, wherein a guide groove is established to define each said cord passage at said cord management positions, said groove receiving one of said outrigger cords.

4. The method as recited in claim **1**, further comprising establishing said lines to troll transversely to said outrigger structure, each of said lines being secured on one end thereof to said surface vessel by a rod, and a distal end of each of said lines being baited and drawn in water; whereby causing tension on said distal end causes said retention device to release said line to cause the rod to directly troll said distal end and bypassing each of every other line.

5. The method as recited in claim **1**, wherein said cord management positions include a proximate position nearest the surface vessel, a distal position farthest from the surface vessel, and a plurality of intermediate positions defined along the outrigger structure therebetween, said proximate position and one of the intermediate positions each concurrently passing an equal number of cords, the remaining intermediate position and said distal position respectively passing a progressively decreasing number of outrigger cords.

6. The method as recited in claim **1**, wherein said cord passages of said cord management positions are each defined by a rotatable pulley member.

7. The method as recited in claim **6**, wherein the plurality of cord passages of said cord management positions are respectively defined by a plurality of independently rotatable pulley members.

8. The method as recited in claim **7**, wherein said pulley members of each said cord management position are coaxially disposed.

9. The method as recited in claim **1**, wherein at least one of said cord management positions is releasably established on the outrigger structure.

10. The method as recited in claim **1**, wherein at least one pivot point is established to include a plurality of rotatable members receiving the outrigger cords respectively thereabout.

11. The method as recited in claim 1, wherein each said retention device is established to include a clip portion for releasably retaining a line and stop cork.

12. A method of managing outrigger cords for a surface vessel having an outrigger structure, comprising:

establishing a plurality of outrigger cords;

establishing a plurality of cord management positions longitudinally spaced one from the other along at least a portion of the outrigger structure;

defining at each of said cord management positions within the portion of the outrigger structure a plurality of cord passages transversely offset one from the other, the cord passages each forming a guide groove receiving and guiding a predetermined one of said outrigger cords to maintain independent displacement thereof relative to the outrigger structure, and retaining said cord management positions such that the cord passages extend at fixed angular orientations relative to the outrigger structure;

arranging said cord management positions along the portion of the outrigger structure with consecutive cord management positions within the portion respectively guiding a progressively decreasing number of outrigger cords; and,

establishing a plurality of retention devices each coupled to one of said outrigger cords to define a retention point for advancing a line longitudinally along the outrigger structure responsive to displacement of said outrigger cord.

13. The method as recited in claim 12, wherein the plurality of cord passages of said cord management positions are respectively defined by a plurality of independently rotatable pulley members.

14. The method as recited in claim 13, wherein said pulley members of each said cord management position are coaxially disposed.

15. A method of managing outrigger cords for a surface vessel having an outrigger structure, comprising:

establishing a plurality of outrigger cords;

establishing a plurality of cord management positions longitudinally spaced one from the other along at least a portion of the outrigger structure;

fixedly positioning a plurality of rotatable pulley members coaxially disposed at each of said cord management positions within the portion of the outrigger structure to define a plurality of cord passages transversely offset one from the other, the cord passages each guiding a predetermined one of said outrigger cords to maintain independent longitudinal displacement thereof relative to the outrigger structure, and retaining said rotatable pulley members such that the cord passages extend at fixed angular orientations relative to the outrigger structure;

arranging said cord management positions along the portion of the outrigger structure with consecutive cord management positions within the portion of the outrigger structure respectively guiding a progressively decreasing number of outrigger cords; and, establishing a plurality of retention devices each coupled to one of said outrigger cords to define a retention point for advancing a line longitudinally along the outrigger structure responsive to displacement of said outrigger cord.

16. The method as recited in claim 15, wherein the plurality of cord passages of said cord management positions are respectively defined by a plurality of independently rotatably pulley members disposed within a housing fastened to the outrigger structure.

17. The method as recited in claim 16, wherein said pulley members at each of said cord management positions are coaxially disposed.

18. The method as recited in claim 15, wherein said pulley members of at least one of said cord management positions are releasably fastened to the outrigger structure.

19. The method as recited in claim 15, further comprising establishing for each said cord a pivot point laterally offset from the outrigger structure, each said outrigger cord being displaceably retained by said pivot point to extend from said pivot point and through predetermined ones of said cord management positions in an endless loop.

20. The method as recited in claim 15, wherein said pulley members of at least one of said cord management positions are supported by a housing releasably fastened to the outrigger structure.

* * * * *

EXHIBIT

US009717226B1

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Mercier

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(45) **Date of Patent: *Aug. 1, 2017**

(54) **OUTRIGGER LINE MANAGEMENT SYSTEM**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

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B63B 35/14 (2006.01)
(Continued)

(52) **U.S. Cl.**
CPC ***A01K 91/08*** (2013.01); ***A01K 91/053*** (2013.01); ***A01K 91/18*** (2013.01); ***B63B 21/04*** (2013.01); ***B63B 35/14*** (2013.01)

(58) **Field of Classification Search**
CPC A01K 91/053; A01K 91/08; A01K 91/18; A01K 79/00; A01K 99/00
(Continued)

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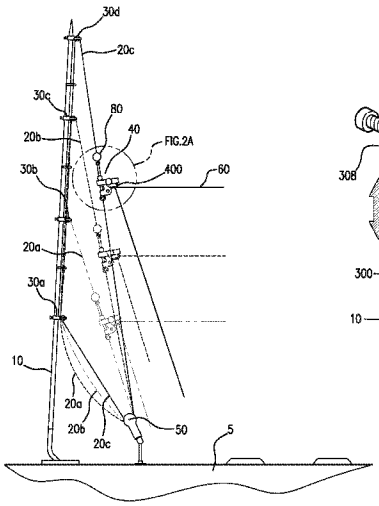
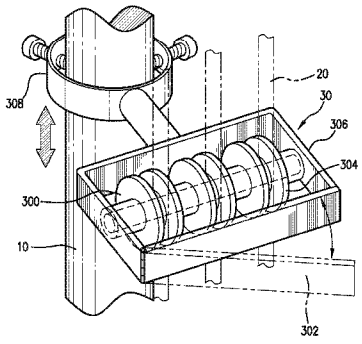
(57) **ABSTRACT**

A line management system for an outrigger structure is provided for guiding outrigger cords through cord passages to maintain an independent longitudinal displacement in order to prevent entanglement. The system includes a plurality of outrigger cords, cord management units, and retention devices. The plurality of cord management units are coupled to the outrigger structure and are longitudinally spaced one from the other along the outrigger structure. Each of the cord management units defines a plurality of transversely offset cord passages respectively guiding predetermined ones of outrigger cords to maintain an independent longitudinal displacement relative to the outrigger structure.

20 Claims, 6 Drawing Sheets





Related U.S. Application Data

division of application No. 12/726,695, filed on Mar. 18, 2010, now Pat. No. 8,656,632.

(51) **Int. Cl.**

A01K 91/053	(2006.01)
A01K 91/18	(2006.01)
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(58) **Field of Classification Search**

USPC 43/27.4, 43.12, 43.13, 42.74, 27.2, 21.2; 114/255, 364; 254/405

See application file for complete search history.

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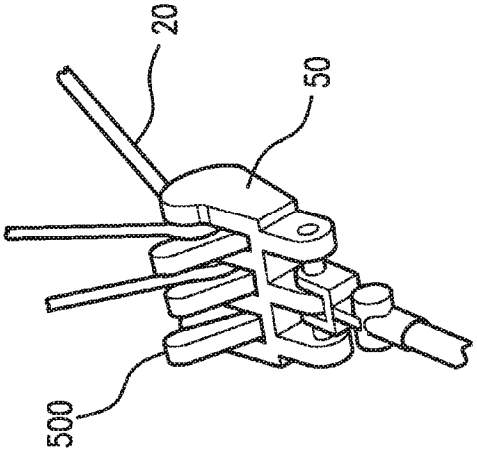

FIG. 1A

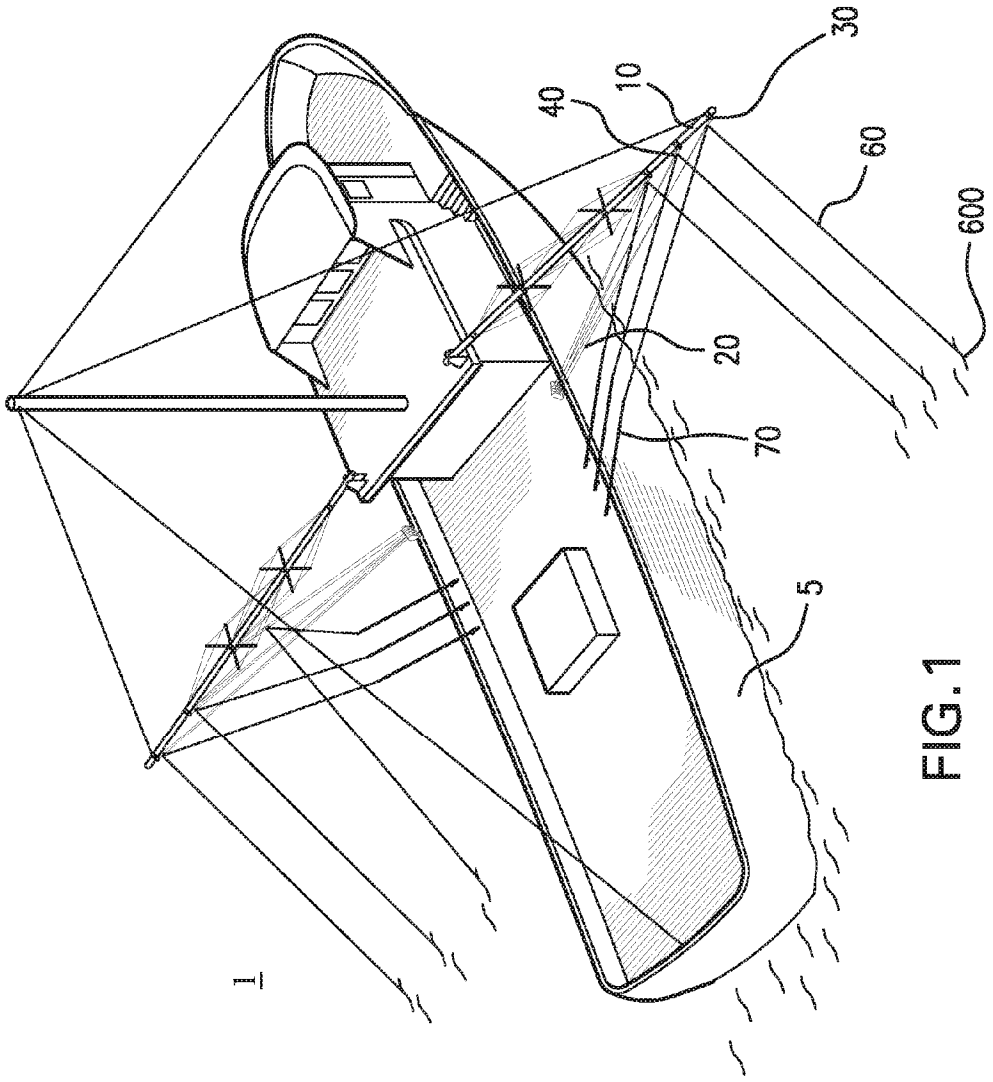

FIG. 1

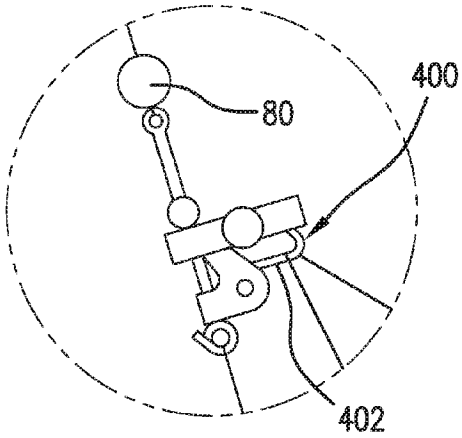
400
80
402

FIG.2A

30d
20c
30c
80
40
20b
FIG.2A
400
60
30b
20a
30a
10
20a
20b
20c
50
5

FIG.2

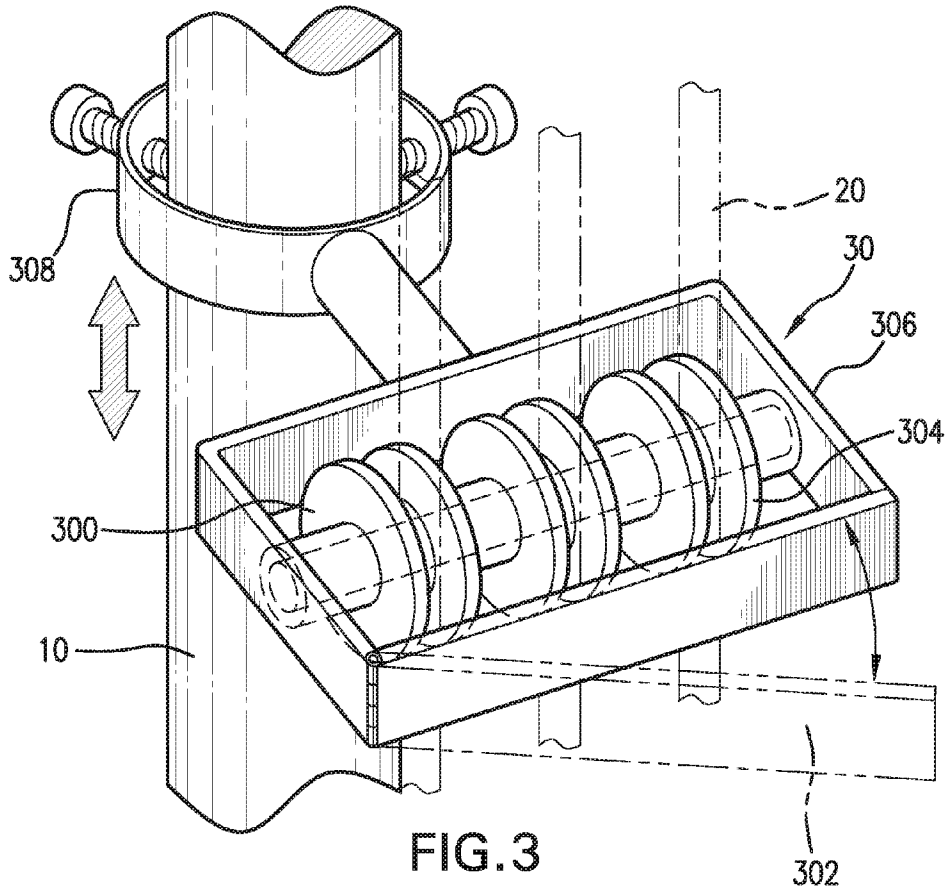

FIG.3

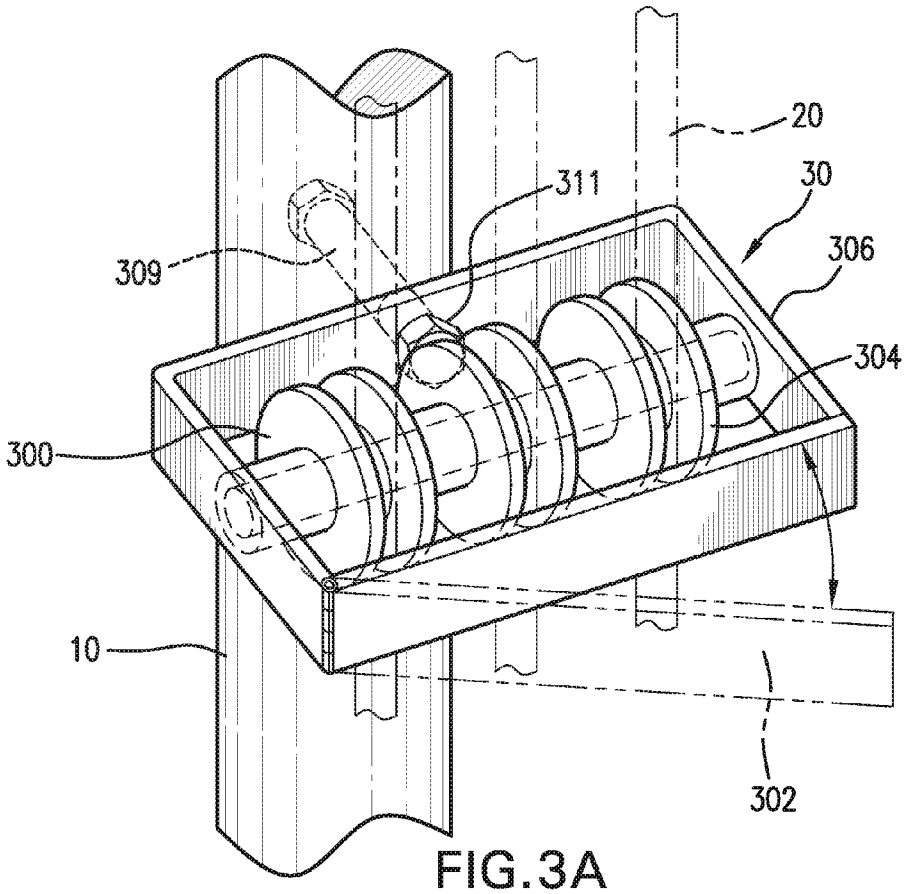

FIG.3A

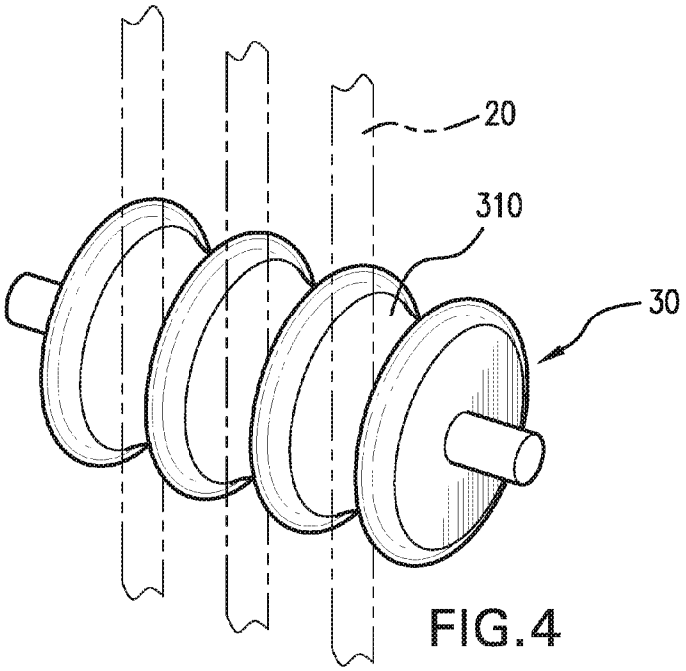

FIG.4

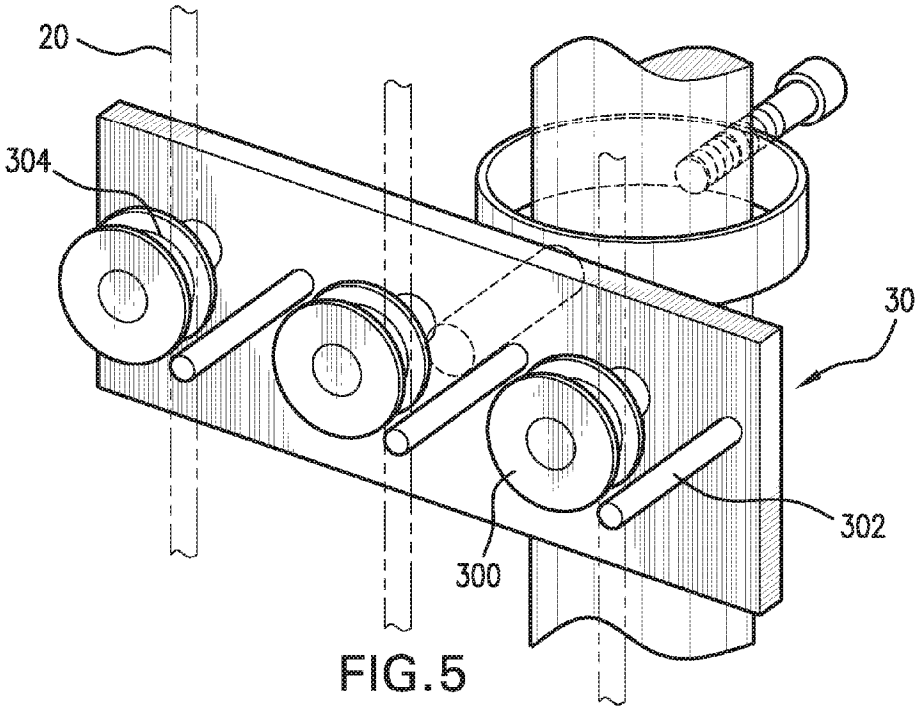

FIG.5

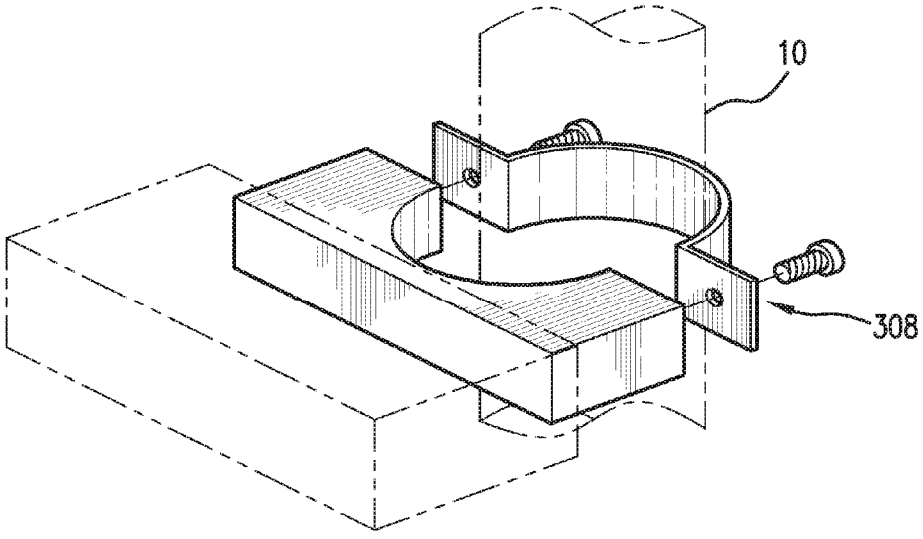

FIG.6

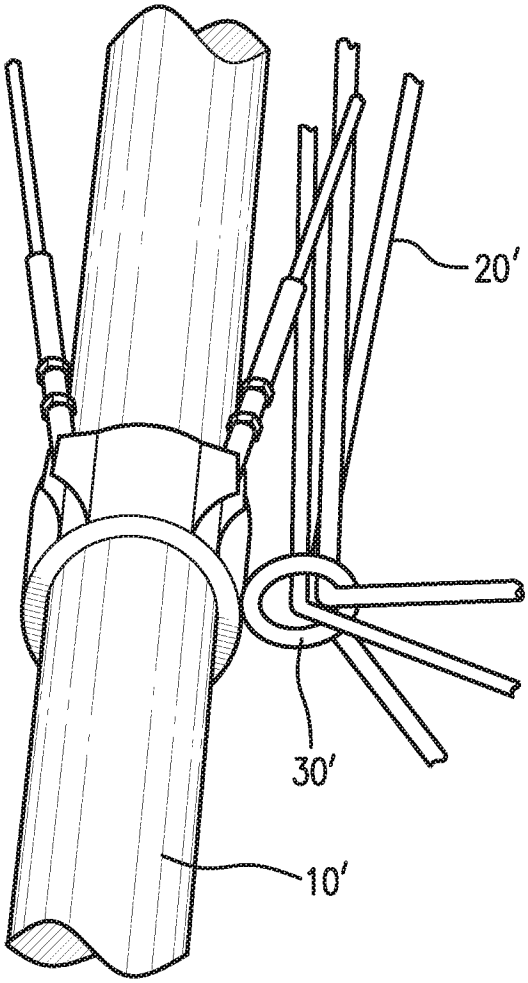

FIG. 7

OUTRIGGER LINE MANAGEMENT SYSTEM

RELATED APPLICATIONS

This application is a Continuation of co-pending application Ser. No. 14/188,180, filed 24 Feb. 2014, which is a Divisional of application Ser. No. 12/726,695, filed on 18 Mar. 2010, now U.S. Pat. No. 8,656,632. The entire disclosure of the prior application Ser. No. 14/188,180 is considered a part of the disclosure of the accompanying Continuation application and is hereby incorporated by reference.

BACKGROUND OF THE INVENTION

The subject outrigger line management system is generally directed to a system for enabling convenient displacement of articles along an outrigger structure. More specifically, the outrigger line management system maintains smooth and efficient displacement of individual lines, cords, or other mechanical link employed to so displace articles along a given outrigger support structure.

Outrigger structures are used on surface vessels to extend the lateral reach of the vessel for various purposes. Cast line fishing applications provide one example where outrigger structures provide useful extension of support points for concurrent use of multiple fishing lines. Typically, a fishing rod feeds a fishing line on which one or more baited hooks are provided. The baited ends of the fishing lines are cast into the water to attract fish about the given boat or other surface vessel. Where more than a few fishing lines are so cast from the same vessel into surrounding waters, intertangling remains a persistent problem, particularly where the vessel continues moving to, for example, troll the lines through the water. Tangling becomes an even greater threat when the vessel undergoes abrupt turns or encounters fast moving currents. To prevent such interference and tangling, fishing lines may be supported through one or more pivot points displaced along the length of an outrigger structure. The baited ends of different fishing lines are thereby spaced to be dragged through the water, each held safely away from the vessel and one another to avoid interference.

In this manner, outrigger support structures extend fishing/trolling lines laterally out beyond the wake of a moving boat. They allow the safe deployment of multiple fishing lines cast out from the boat each pivoted at different points along the outrigger structure to remain separated by sufficient fishing space (until release of the lines from their pivot points is triggered) to prevent entanglement.

Outrigger structures are usually installed on a boat to be moved inline with the hull or folded into a mast when not in service. Typically, a pair of outrigger structures are installed at starboard and port gunwale locations.

Known outrigger structures are often provided with a plurality of fixed eyehooks longitudinally spaced therealong. A plurality of outrigger cords are then passed through the eyehooks and a pulley assembly disposed at a fixed point on the boat. Each outrigger cord forms a displaceable loop about the pulley assembly and one or more supporting eyehooks, and each carries a clip on which a fishing line may be secured for movement along an outrigger structure with the outrigger cord. A user may retract or advance the clip by pulling the corresponding outrigger cord in one direction or the other through its loop. So when a fishing line is to be baited, the user pulls one outrigger cord to draw the clip within reach, 'loads' the clip with an appropriately baited fishing line that has been cast, then pulls the outrigger cord in a reverse direction to return the loaded clip to a deployment position on the outrigger structure. This process is repeated for each baited fishing line that has been cast out from a certain point on the boat. When a 'bite' occurs, or when a fishing line encounters sufficient tension, the clip releases, so that the line returns to form a direct line between its feeding point (i.e., fishing rod) for active user control.

This process is not without significant practical obstacles to smooth, proper operation. FIG. **7** depicts a portion of an outrigger structure **10'** having an eye hook **30'** for pivotally retaining its outrigger cords **20'**, as used in the prior art. Normally, multiple outrigger cords **20'** are used to concurrently deploy multiple fishing lines. The multiple outrigger cords **20'** passing through the collar-like eyehook **30'** invariably bunch together during operation, getting tightly intertwined when subjected to tension and manipulation. Much friction results between the tightly packed outrigger cords **20'** themselves, as well as between each cord **20'** and eye hook **30'**. Being that the outrigger cords are normally supported snugly between the eye hook **30'** and other pivot points, a particularly high friction point is created at the sharp bend typically formed at one or more of the eye hooks **30'**. The friction makes it very difficult to displace individual outrigger cords to load and deploy their clips, at least not without mighty physical exertion. Moreover, the considerable friction that must be overcome to effect such cord movement causes premature wearing on the cords themselves.

Various outrigger structures are known in the art. By way of example, U.S. Pat. No. 3,462,870 discloses several embodiments of a fishing system that uses a buoy line maintained in a desired area by an airborne kite. The system can have a plurality of lines operated by a fisherman having a reel with a plurality of spools which may be individually wound without disturbing the others. The lines can also be operated by individual fishermen each having a reel. The individual lines may be secured to the buoy line with a releasable clip that disengages when a fish applies tension to the line, allowing that particular line to be cleared of the remaining fishing lines and to be reeled in.

U.S. Pat. No. 3,060,614 is directed to a multiple pole trolling device for mounting on a boat. The multiple pole trolling devices are spaced apart and rotatably mounted on a pole base that is rotatable and tiltably adjustable. Each of the poles has a fixed trolling line located in the water when set to a rearward position. When the assembly is rotated, the line comes out of the water over the boat so that the fish can be removed.

U.S. Pat. No. 2,196,472 is directed to a fishing apparatus in the form of a tree formed of tubular members that support a plurality of fishing lines. The tree may be thrust into the bottom of a body of water. The mast as shown has a set of screws that may be used to adjust the coaxial tubular members for use in water of different depths.

U.S. Pat. No. 3,358,399 is directed to a kite fishing apparatus having two reels, one for a kite line, and the other for a fishing line. A three-in-one glider-type structure is provided and functions to carry the fishing line over the body of water. The baited end of the fishing line is cast out by the outgoing kite line and by means provided to detachably and adjustably connect the kite line to the fishing line.

U.S. Pat. No. 4,388,774 is directed to a fishing line system for use on a boat that supports six fishing rods each spaced from the other to prevent the fishing lines from tangling during trolling. A pull on either side of the boat is mounted on roller booms that can be extended or retracted as required. A rearwardly extending pair of fishing poles are carried by holders mounted on the stern of the boat to

position lines laterally inward of lines. The booms are disposed transversely to the left of the boat and are supported by antifriction assemblies which support the booms.

A significant drawback remains in the prior art for effectively managing the outrigger cords to enable loading and deploying of articles along an outrigger structure. There is, therefore, a need for a system that enables sufficiently free, unrestricted individual displacement of the outrigger cords along the outrigger structure.

SUMMARY OF THE INVENTION

It is therefore an object of the present invention to provide a line management system for an outrigger structure which maintains guiding outrigger cords in convenient, independently displaceable manner.

These and other objects are attained by the outrigger line management system formed in accordance with the present invention. The system comprises of a plurality of outrigger cords, cord management units, and retention devices. The plurality of cord management units are coupled to the outrigger structure and are longitudinally spaced one from the other along the outrigger structure. Each of the cord management units defines a plurality of transversely offset cord passages respectively guiding predetermined ones of outrigger cords to maintain an independent longitudinal displacement relative to the outrigger structure. The plurality of retention devices are each coupled to one of the outrigger cords. Each of the retention devices defines a retention point for advancing a fishing line longitudinally along the outrigger structure responsive to a displacement of the outrigger cord.

In certain exemplary embodiments, the system also includes a pivot unit laterally offset from the outrigger structure displaceably retaining each of the outrigger cords. Each of the outrigger cords extends from the pivot unit and through predetermined ones of cord management units in an endless loop.

In another exemplary embodiment, a method for managing the outrigger cords comprises the steps of (1) establishing a plurality of outrigger cords, (2) establishing a plurality of cord management positions, (3) defining each cord management positions, (4) arranging the cord management positions, and (5) establishing a plurality of retention devices. The cord management positions are established longitudinally spaced one from the other along the outrigger structure. Each of the cord management positions are then defined to include a plurality of transversely offset cord passages respectively guiding predetermined ones of the outrigger cords to maintain an independent longitudinal displacement relative to the outrigger structure. The cord management positions are arranged to define a portion of the outrigger structure a progressively decreasing number of cord passages. The retention devices are established to define a retention point for advancing a line longitudinally along the outrigger structure responsive to a displacement of the outrigger cord.

Those skilled in the art will appreciate the scope of the present invention and realize aspects thereof after reading the following detailed description of the preferred embodiments in association with the accompanying illustrative figures.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying illustrative figures incorporated in and forming a part of this specification depict several aspects of the invention, and together with the description serve to explain the principles of the invention.

FIG. **1** is a diagram illustrating a view of a line management system installed on a surface vessel in accordance with one exemplary embodiment of the present invention;

FIG. **1**A is a diagram illustrating an enlarged view of the pivot unit in the embodiment depicted in FIG. **1**;

FIG. **2** is a diagram schematically illustrating a portion of the line management system operation on an outrigger structure in accordance with an exemplary embodiment of the present invention;

FIG. **2**A is an exploded plan view of a retention device depicted in FIG. **2**;

FIG. **3** is a perspective view schematically illustrating a cord management unit formed in accordance with an exemplary embodiment of the present invention;

FIG. **3**A is a perspective view schematically illustrating a cord management unit formed in accordance with an alternate embodiment of the present invention;

FIG. **4** is a perspective view of a cord management unit formed in accordance with an alternate embodiment of the present invention;

FIG. **5** is a schematic perspective view of a cord management unit formed in accordance with another alternate embodiment of the present invention;

FIG. **6** is an exploded perspective view of a clamp member formed in accordance with another alternate embodiment of the clamp member depicted in FIG. **5**; and,

FIG. **7** is a perspective view of an eye hook employed in the prior art for guiding cords on an outrigger structure.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The embodiments set forth below represent the necessary information to enable those skilled in the art to practice the invention and illustrate the best mode of practicing the invention. In light of the illustrated figures and the following description, those skilled in the art will understand the concepts of the invention and will recognize applications of these concepts not particularly addressed herein. It should be understood that these concepts and applications fall within the scope of the disclosure and accompanying claims.

Wherever possible in the following description, similar reference numerals will refer to corresponding elements on parts of different Drawings unless otherwise indicated.

Referring to FIGS. **1** and **2**, there is a depiction of an exemplary embodiment of the line management system **1** for a surface vessel or boat **5**. The line management system **1**, installed as shown on a boat, includes a plurality of outrigger cords **20**, a plurality of cord management units **30**, and a plurality of retention devices **40** all coupled to the outrigger structure **10**. As depicted in FIG. **1**, the outrigger structure **10** may be mounted on top of a surface vessel, to the gunwale or bow, or any other suitable part of the vessel for supporting a plurality of articles therealong. System **1** may be applied to various applications to aid in the smooth loading and deployment of suitable articles to be supported along the outrigger structure **10**. The fishing application shown for illustrative purposes herein is but one of numerous such applications where system **1** may be employed in accordance with various aspects of the present invention.

In the fishing application illustrated, the outrigger structure **10** allows the deployment of more fishing lines **60** cast out from the boat each separated from the other by adequate fishing space than would normally be possible. The spacing prevents fishing lines **60** from entangling during trolling

with other fishing lines **60** originating from the same boat **5**. The number of fishing lines **60** being trolled increases the chances of catching fish and permits multiple individuals to fish from the boat **5**. Use of outrigger structure **10** equipped with system **1** in accordance with the present invention mitigates the inherent entanglement risk while preserving ease of use. Each outrigger structure **10** may be suitably formed as one piece, or made up of individual outrigger sections joined together.

In accordance the present invention, a line management system **1** is coupled to each outrigger structure **10** used for support extension purposes—such as to extend support for a fishing line **60** to the side of a boat during trolling. The line management system **1** is used for safely guiding outrigger cords **20** through cord passages to maintain an independent longitudinal displacement in order to prevent entanglement. Typically, when the outrigger structure **10** is in use, it is extended transversely to the length of a boat **5** for trolling fishing lines **60** coupled to the retention device **40**. The outrigger structure **10** thus serves to increase the span of the boat to allow more fishing lines **60** to be trolled. By way of example, a 28 foot fishing boat having a 16 foot wide fishing platform can have a pair of outrigger structures **10**, with each outrigger structure **10** being 40 foot long. Once the fishing boat **5** is ready to fish, each of the outrigger structures **10** is extended transversely from the boat in opposite directions to effectively create a 96 foot wide fishing platform from which to suspend multiple fishing lines **60**.

In one preferred embodiment, a plurality of outrigger cords **20** are supported along the longitudinal length of the outrigger structure **10** by at least one cord management unit **30**. Typically, a plurality of cord management units **30** is employed, with each cord management unit **30** firmly coupled to the outrigger structure **10**. The cord management units **30** are longitudinally spaced one from the other along the outrigger structure **10**.

Each outrigger cord **20** is coupled with a retention device **40** for securing a retention point **400** on a fishing line **60**. The retention device **40** facilitates individual management of each fishing line **60** during, for example, sport fishing. When multiple baited fishing lines **60** are being cast out from a boat **5**, the retention device **40** allows for each fishing line **60** fed from a certain point on the boat **5**, by a fishing rod **70** for instance, to be maintained without interfering with the other fishing lines **60** being trolled.

Each outrigger cord **20** is preferably looped through a pivot unit **50** spaced from an outrigger structure **10** and at least one cord management unit **30** provided on such outrigger structure **10** (as described in following paragraphs). Each outrigger cord **20** remains longitudinally displaceable relative to the outrigger structure **10** so that a user may retract or advance the retention point **400**. Each of the retention devices **40** defines a retention point **400** for pivotally supporting a fishing line. This retention point **400** is preferably displaceable longitudinally along the outrigger structure responsive to a displacement of the outrigger cord **20**. Typically, the outrigger cord **20** is displaced to retract the retention point **400** or retention device **40** when seeking to attach or manage a fishing line **60**. Once the fishing line **60** is attached to the retention device **40**, the outrigger cord **20** is then advanced by displacing the outrigger cord **20** to a relative position that gives adequate longitudinal spacing with respect to the other fishing lines **60**.

In certain embodiments, the retention device **40** pivotally retains a fishing line **60** at the retention point **400** until sufficient resistance is encountered on the line **60**. When a fish bites the line, for instance, the pull on line **60** will cause its release from the retention device **40**.

Once retracted, a user may bait, then releasably attach a fishing line **60** to a retention point **400**. When the retention point **400** is advanced back out along the given outrigger structure **10**, the retention point preferably serves as a point from which the line's baited end extends into the water. One or more fishing lines **60** may be so retained to extend in pivoted manner from a portion of each outrigger cord **20**, so long as suitable spacing is maintained to avoid undue line cluttering and tangling. In the embodiment illustrated, one retention device **40** is shown connected to each individual cord **20**.

As depicted in FIG. **2**, the outrigger cords **20** are individually coupled to a stop cork **80** that acts to limit the displacement of the outrigger cords past a predetermined point. The stop cork **80** limits the displacement by preventing the retention device **40** from unintentionally getting wedged in the cord management unit **30**.

In the preferred embodiment, the line management system **1** also includes a pivot unit **50** preferably anchored to a fixed point on the boat **5**, laterally offset from the outrigger structure **10** for displaceably retaining a portion of each outrigger cord **20**. The pivot unit **50** acts as a pivotal support about which the outrigger cords **20** may be displaced. Each of the outrigger cords **20** extends from the pivot unit **50** and through respective cord management units **30**, preferably in an endless loop.

In an exemplary embodiment, the pivot unit **50** includes a plurality of rotatable members **500** individually receiving a respective outrigger cord **20**. However, the pivot unit **50** is not limited to a rotatable structure and may be any structure of suitable type to provide a pivot support for displacement of the outrigger cords **20**.

Each retention device **40**, as depicted in FIG. **2**A, is coupled to an outrigger cord **20** and used to transport an intermediate portion of a fishing line **60** relative to outrigger structure **10**. Among other things, the retention device **40** comprises of a clip portion **402** and retention point **400**. The clip portion **402** allows for the free release of the line **60** when the line is caused to apply sufficient resistance pressure thereon.

When multiple fishing lines **60** are being trolled in the water, in the illustrated embodiment, the lines **60** are preferably maintained by system **1** in such a way that each fishing line **60** clears every other fishing line **60** on its way back towards its feed point (such as the corresponding fishing pole **70**) upon released from the clip portion **402**. The originating/feed points of the fishing lines **60** are suitably arranged, so that when one fishing line **60** releases from its retention device **40**, the fishing line **60** does not physically contact or otherwise interfere with the other deployed fishing lines **60** on its return to a direct line extension from the originating point. It is not unusual to have the retention devices **40** coupled to respective outrigger cords **20** to be displaced in height 8 feet relative to each other, to ensure a clear path of return as a direct line from the feed point (to the water) is restored by a released fishing line **60**.

In a typical application, one end of a fishing line **60** may be fed to originate from a fishing rod **70** temporarily secured to a support bracket provided on the boat **5**. A distal end **600** is baited and drawn in the water during trolling. The retention point **400** is located between the originating end and distal end **600** of the fishing line. The retention point **400** provides a pivot point from which the distal portion (having the end **600**) of the fishing line **60** may be suspended from the outrigger structure **10** for safe trolling. The clip portion

402, which may be made of any suitably resilient or rigid material having enough structural strength to hold the fishing line 60 in place, is configured to open when there is tension on the fishing line 60. For example, when a fish takes the bait at the distal end 600 of the fishing line 60 and causes sufficient tension thereon, the clip portion 402 of the retention device 40 will release. Thereafter, the fishing line 60 must be re-loaded onto the retention device 40 if that line is to be deployed again at its trolling position.

To re-couple fishing line 60 (to re-load a retention device 40), the particular outrigger cord 20 for the clip portion 402 that released the fishing line 60 is pulled to draw the retention device 40/clip portion 402 back in towards the boat until it is within a user's reach. The clip portion 402 is re-loaded by coupling a newly-baited fishing line 60. Once the retention device 40 is drawn in for re-coupling, the clip portion 402 may be snapped open or pulled away from the retention device 40 to an open position so that the fishing line 60 may be hooked by the retention point 400. Thereafter, the retention device 40 is advanced outward again by accordingly displacing its outrigger cord 20. In accordance with one aspect of the present invention, the outrigger cords 20 are independently maintained along respective transversely offset cord passages 304 as described in following paragraphs, such that each may be freely displaced, and the longitudinal displacement of any of the outrigger cords 20 will not interfere with the rest of the outrigger cords 20.

As depicted in FIG. 3, the line management system 1 also includes at least one a cord management unit 30 for each cord 20. In broad concept, the cord management unit 30 defines a plurality of transversely offset cord passages 304 which independently guide the outrigger cords 20 longitudinally along the outrigger structure 10. The cord management unit 30 allows for multiple outrigger cords 20 to be independently controlled without undue interference from the other outrigger cords 20.

Each cord management unit 30 preferably includes independently displaceable pulley members 300 to engage respective outrigger cords 20. In the disclosed embodiment, the pulley members 300 are made wheel-like to be freely rotatable. Since each pulley member 300 is freely rotatable and exposed to the weather elements on the boat, suitable measures may be necessary to weatherize said pulley members 300, depending on the specific requirements of a particular application. For example, the pulley members 300 may be suitably sealed. Preferably, the pulley members 300 are made of composite, wood, metal, or other such material having enough strength and resilience to withstand the environmental elements, friction, and forces that the members would be typically subjected to during use.

The pulley members 300 define transversely offset cord passages 304 whose concave profiles are directed radially outward to receive and guide respective outrigger cords 20, and maintain their independent longitudinal displacement relative to the outrigger structure 10. The transversely offset cord passages 304 may are formed with annular grooves 310 having, for example U-shaped or V-shaped sectional profiles. The annular grooves 310 are configured to provide lateral support and containment sufficient to avoid slippage of the outrigger cords 20 therefrom.

In preferred embodiments, a plurality of cord management units 30 are arranged along a length of each outrigger structure 10, so that decreasing numbers of transversely offset cord passages 304 are provided by successive unit 30. For example, a system 1 configured to support three separate outrigger cords 20*a*, 20*b*, 20*c* on an outrigger structure 10, as illustrated in FIG. 2, would employ with the pivot unit 50 four cord management units 30*a*, 30*b*, 30*c*, 30*d*. The cord management units 30*a*-30*d* are then arranged to define, along a portion of the outrigger structure 10, a progressively decreasing number of cord passages 304.

In the embodiment illustrated in FIG. 2, for example, the first two cord management units 30*a*, 30*b* closest to the boat 5, would preferably each define three cord passages 304 to participate in guiding all three outrigger cords 20*a*, 20*b*, 20*c*. The third cord management unit 30*c* would preferably define one less cord passage, or two cord passages 304, to participate in guiding just two of the outrigger cords 20*b*, 20*c*, since the first outrigger cord 20*a* pivots at the second cord management unit 30*b* to return to the pivot unit 50. The next cord management unit 30*d* may then define even fewer cord passages, or one cord passage 304 in this case, to participate in guiding the one remaining outrigger cords 20*c*, since the first outrigger cord 20*b* pivots at the third cord management unit 30*c* to return to the pivot unit 50.

In certain alternate embodiments, of course, the number of cord management units 30, as well as the arrangement and extent of cord passages defined by respective cord management units 30, may be varied to suit the particular requirements of the intended applications. While not the most efficient, for example, each outrigger cord 20 may be looped about the pivot unit 50 and a set of cord management units 30 whose cord passages pass that outrigger cord 20 only, to the exclusion of the other outrigger cords 20. Each cord management unit might then need to define but one cord passage, but measures would be required to ensure that the cord passages of one cord management unit set (for a given cord 20) are maintained in sufficiently transversely offset manner from the cord passages defined by an adjacent set of such units (for another cord 20) to avoid interfering contact.

In certain other alternate embodiments, one or more of the cord management units 30 may be of modular configuration to facilitate flexible adaptation to different applications. For example, individual pulley member modules 300 may be disposed in replaceable manner within the housing 306 of a cord management unit 30, such that numbers and even the precise positions of the individual pulley or other members 300 within the unit 30 may be adjustably varied to suit different needs. Suitable measures would then be employed to enable such individual replacement of a pulley member module 30, or its re-positioning, within the housing 306.

In preferred embodiments, the pulley members 300 are coaxially aligned, sharing the same shaft. The outrigger cords 20 are secured in the cord passages 304 by a bridge member 302. Preferably, the bridge member 302 is reconfigurably coupled to a housing 306 structure to contain the plurality of outrigger cords 20 in one position and allow their removal in another. The housing 306 is suitably formed to provide structural support and containment for the pulley members 300 and the outrigger cords 20. In the embodiment of FIG. 3, the bridge member 302 is displaceable relative to the pulley members 300 about a hinged coupling between the first and second positions. The first and second positions represent open and closed positions respectively. The plurality of cord management units 30 are longitudinally spaced along the outrigger structure 10 and their housings 306 releasably fastened by clamp member 308. The clamp member 308 may be sleeved onto the outrigger structure 10, selectively positioned on the outrigger structure 10, and fastened by a bolt, snap, strap, fire tie, cable, or other such suitable fastening measures known in the art. The fasteners serve to secure the clamp member 308 to the outrigger

structure **10** to prevent the cord management unit **30** from being unintentionally displaced relative to the outrigger structure **10**.

FIG. **3**A is an alternate embodiment of the line management system **1** depicted in FIG. **3**. The line management system **1** also includes at least one a cord management unit **30** for each cord **20**. In broad concept, the cord management unit **30** defines a plurality of transversely offset cord passages **304** which independently guide the outrigger cords **20** longitudinally along the outrigger structure **10**. The cord management unit **30** allows for multiple outrigger cords **20** to be independently controlled without undue interference from the other outrigger cords **20**.

Each cord management unit **30** preferably includes independently displaceable pulley members **300** to engage respective outrigger cords **20**. In the disclosed embodiment, the pulley members **300** are made wheel-like to be freely rotatable. Since each pulley member **300** is freely rotatable and exposed to the weather elements on the boat, suitable measures may be necessary to weatherize said pulley members **300**, depending on the specific requirements of a particular application. For example, the pulley members **300** may be suitably sealed. Preferably, the pulley members **300** are made of composite, wood, metal, or other such material having enough strength and resilience to withstand the environmental elements, friction, and forces that the members would be typically subjected to during use.

The pulley members **300** define transversely offset cord passages **304** whose concave profiles are directed radially outward to receive and guide respective outrigger cords **20**, and maintain their independent longitudinal displacement relative to the outrigger structure **10**. The transversely offset cord passages **304** may are formed with annular grooves **310** having, for example U-shaped or V-shaped sectional profiles. The annular grooves **310** are configured to provide lateral support and containment sufficient to avoid slippage of the outrigger cords **20** therefrom.

In preferred embodiments, a plurality of cord management units **30** are arranged along a length of each outrigger structure **10**, so that decreasing numbers of transversely offset cord passages **304** are provided by successive unit **30**. For example, a system **1** configured to support three separate outrigger cords **20***a*, **20***b*, **20***c* on an outrigger structure **10**, as illustrated in FIG. **2**, would employ with the pivot unit **50** four cord management units **30***a*, **30***b*, **30***c*, **30***d*. The cord management units **30***a*-**30***d* are then arranged to define, along a portion of the outrigger structure **10**, a progressively decreasing number of cord passages **304**.

In the embodiment illustrated in FIG. **2**, for example, the first two cord management units **30***a*, **30***b* closest to the boat **5**, would preferably each define three cord passages **304** to participate in guiding all three outrigger cords **20***a*, **20***b*, **20***c*. The third cord management unit **30***c* would preferably define one less cord passage, or two cord passages **304**, to participate in guiding just two of the outrigger cords **20***b*, **20***c*, since the first outrigger cord **20***a* pivots at the second cord management unit **30***b* to return to the pivot unit **50**. The next cord management unit **30***d* may then define even fewer cord passages, or one cord passage **304** in this case, to participate in guiding the one remaining outrigger cords **20***c*, since the first outrigger cord **20***b* pivots at the third cord management unit **30***c* to return to the pivot unit **50**.

In certain alternate embodiments, of course, the number of cord management units **30**, as well as the arrangement and extent of cord passages defined by respective cord management units **30**, may be varied to suit the particular requirements of the intended applications. While not the most efficient, for example, each outrigger cord **20** may be looped about the pivot unit **50** and a set of cord management units **30** whose cord passages pass that outrigger cord **20** only, to the exclusion of the other outrigger cords **20**. Each cord management unit might then need to define but one cord passage, but measures would be required to ensure that the cord passages of one cord management unit set (for a given cord **20**) are maintained in sufficiently transversely offset manner from the cord passages defined by an adjacent set of such units (for another cord **20**) to avoid interfering contact.

In certain other alternate embodiments, one or more of the cord management units **30** may be of modular configuration to facilitate flexible adaptation to different applications. For example, individual pulley member modules **300** may be disposed in replaceable manner within the housing **306** of a cord management unit **30**, such that numbers and even the precise positions of the individual pulley or other members **300** within the unit **30** may be adjustably varied to suit different needs. Suitable measures would then be employed to enable such individual replacement of a pulley member module **30**, or its re-positioning, within the housing **306**.

In preferred embodiments, the pulley members **300** are coaxially aligned, sharing the same shaft. The outrigger cords **20** are secured in the cord passages **304** by a bridge member **302**. Preferably, the bridge member **302** is reconfigurably coupled to a housing **306** structure to contain the plurality of outrigger cords **20** in one position and allow their removal in another. The housing **306** is suitably formed to provide structural support and containment for the pulley members **300** and the outrigger cords **20**. In the embodiment of FIG. **3**, the bridge member **302** is displaceable relative to the pulley members **300** about a hinged coupling between the first and second positions. The first and second positions represent open and closed positions respectively.

In this embodiment, the housing **306** is coupled to the outrigger structure **10** by a coupling member **309** that is secured by a securing member **311**. The coupling member **309** may be a bolt, snap, strap, fire tie, cable, or other such suitable fastening measures known in the art. The coupling member **309** serve to secure the housing **306** to the outrigger structure **10** to prevent the cord management unit **30** from being unintentionally displaced relative to the outrigger structure **10**.

The plurality of cord management units **30** are longitudinally spaced along the outrigger structure **10** and their housings **306** releasably fastened by coupling member **309** that is secured by a securing member **311**. The coupling member **309** may be a bolt, snap, strap, fire tie, cable, or other such suitable fastening measures known in the art. The coupling member **309** serve to secure the housing **306** to the outrigger structure **10** to prevent the cord management unit **30** from being unintentionally displaced relative to the outrigger structure **10**.

In certain alternate embodiments, such as depicted in FIG. **4**, the cord management unit **30** may include a spool-like structure that is integrally formed with a plurality of grooves **310** for receiving respective outrigger cords **20**. The cord passages **304** defined within the grooves **310** may be formed of materials with a very low friction coefficient so as to allow individual outrigger cords **20** to smoothly glide along them when displaced. Among other things, the low friction material making up the cord passage **304** in this embodiment would obviate the need for independent pulley members **300** as depicted in FIG. **3**. However, this embodiment has the drawback of generating more friction between the outrigger cords **20** and the respective receiving grooves **310**.

FIG. **5** depicts another alternate embodiment of cord management unit **30**. In this embodiment, the independently displaceable pulley members **300** define cord passages **304** that are laterally offset one from the other to respectively guide outrigger cords **20** to maintain independent longitudinal displacement relative to the outrigger structure. The independent pulley members **300** are respectively coupled to individual shafts which allow independent rotation of each pulley member **300**. Each bridge member **302** is provided as shown to guard against unwanted release of a cord **20** from its pulley member **300**, and thereby retain the outrigger cords **20** operably engaged with the pulley members **300**.

With respect to FIG. **6**, there is shown an alternate embodiment of clamp member **308**. In this embodiment, the clamp member **308** is made up of two separate pieces contoured to conform and easily fasten to the given outrigger structure **10**. The clamp member **308** may be releasably fastened by clamping the separate pieces about the outrigger structure **10** and securing the same with a fastener. The fastener may be a bolt, snap, strap, fire tie, or any other suitable means for fastening the collar-like clamp member **308** pieces to the outrigger structure **10**.

The clamping/fastening measures shown in the illustrated embodiments enable each cord management unit **30** to be retrofitted to existing outrigger structures **10**. The clamp member **308** may be sleeved onto the outrigger structure **10** or releasably fastened by a suitable fastener. Alternatively, where requirements permit, one or more cord management units **30** may also be formed as a fixed or integral part of an outrigger structure **10** itself.

The application of the cord management system **1** of the present inventions is not limited necessarily to fishing. Its use is relevant in any application that requires an outrigger structure, on or off water, where effective management of outrigger cords **20** is necessary to realize the benefits of the structure. For example, system **1** may be employed to set and deploy traps, set and service instrument buoys, or otherwise facilitate the outrigger-aided use and deployment of various other such articles.

The illustrated embodiments implement a method for managing the outrigger cords which generally includes the steps of: (1) establishing a plurality of outrigger cords **20**, (2) establishing a plurality of cord management positions, (3) defining at each cord management position a plurality of transversely offset cord passages **304**, (4) arranging the cord management positions, and (5) establishing a plurality of retention devices **40**. The cord management positions are established longitudinally spaced one from the other along the outrigger structure **10**. A plurality of transversely offset cord passages **304** are defined at certain of the cord management positions to respectively guide predetermined ones of the outrigger cords **20** to maintain independent longitudinal displacement relative to the outrigger structure **10**. The cord management positions **304** are arranged to define along at least a portion of the outrigger structure **10** a progressively decreasing number of cord passages **304**. The retention devices **40** are thereby established to each define a retention point **400** for advancing a line longitudinally along the outrigger structure **10** responsive to a displacement of the outrigger cord **20**.

Although this invention has been described in connection with specific forms and embodiments thereof, it will be appreciated that various modifications other than those discussed above may be resorted to without departing from the spirit or scope of the invention as defined in the appended claims. For example, functionally equivalent elements may be substituted for those specifically shown and described, certain features may be used independently of other features, and in certain cases, particular locations of the elements as well as particular method steps may be reversed or interposed, all without departing from the spirit or scope of the invention as defined in the appended claims.

What is claimed is:

1. An outrigger cord management system for a surface vessel having an outrigger structure, comprising:

a plurality of outrigger cords;

a plurality of cord management units disposed at respective cord management positions longitudinally spaced one from the other along at least a portion of the outrigger structure, each of said cord management units defining at least one cord passage;

at least one of said cord management units within the outrigger structure portion defining a plurality of cord passages transversely offset one from the other, wherein said cord passages respectively guide predetermined ones of said outrigger cords to maintain independent longitudinal displacement thereof relative to the outrigger structure, said at least one cord management unit retaining the cord passages thereof to extend at fixed angular orientations relative to the outrigger structure;

said cord management units disposed along the outrigger structure portion cooperatively defining consecutive cord management positions respectively guiding a progressively decreasing number of outrigger cords; and,

a plurality of retention devices each coupled to one of said outrigger cords to define a retention point for advancing a line longitudinally along the outrigger structure responsive to displacement of said one of said outrigger cords.

2. The system as recited in claim **1**, further comprising a pivot point established for each said outrigger cord, said pivot point being laterally offset from the outrigger structure, each said outrigger cord being displaceably retained by said pivot point to extend from said pivot point and through predetermined ones of said cord management units in an endless loop.

3. The system as recited in claim **1**, wherein said cord management units are configured with guide grooves forming said cord passages at said cord management positions, each said groove receiving one of said outrigger cords.

4. The system as recited in claim **1**, wherein said cord management positions include a proximate position nearest the surface vessel, a distal position farthest from the surface vessel, and a plurality of intermediate positions defined along the outrigger structure therebetween, said proximate position and one of the intermediate positions each concurrently passing an equal number of cords, the remaining intermediate position and said distal position respectively passing a progressively decreasing number of outrigger cords.

5. The system as recited in claim **1**, wherein said at least one cord management unit includes a plurality of rotatable pulley members respectively defining said cord passages.

6. The system as recited in claim **5**, wherein said at least one cord management unit includes a housing supporting said rotatable pulley members, said housing being securely mounted to the outrigger structure by a coupling member engaging the outrigger structure.

7. The system as recited in claim **5**, wherein said at least one cord management unit includes a housing supporting said rotatable pulley members and a clamp member securely

mounting said housing to the outrigger structure, said clamp member being releasably locked by a coupling member.

8. The system as recited in claim **5**, wherein said rotatable pulley members of said at least one cord management unit are coaxially disposed.

9. The system as recited in claim **1**, wherein at least one of said cord management units is releasably fastened to the outrigger structure.

10. The system as recited in claim **1**, wherein at least one pivot point is defined by a plurality of rotatable members receiving the outrigger cords respectively thereabout.

11. The system as recited in claim **1**, wherein each said retention device includes a clip portion for releasably retaining a line and stop cork.

12. A system for managing outrigger cords for a surface vessel having an outrigger structure, comprising:

a plurality of outrigger cords;

a plurality of cord management units fixedly mounted at respective cord management positions longitudinally spaced one from the other along at least a portion of the outrigger structure, each of said cord management units including at least one rotatable pulley member defining a cord passage;

at least one of said cord management units within the outrigger structure portion including a plurality of said rotatable pulley members respectively defining a plurality of cord passages transversely offset one from the other, wherein said cord passages respectively guide predetermined ones of said outrigger cords to maintain independent longitudinal displacement thereof relative to the outrigger structure, said at least one cord management unit retaining the cord passages thereof to extend at fixed angular orientations relative to the outrigger structure;

said cord management units being arranged along the outrigger structure portion to cooperatively define consecutive cord management positions to respectively guide a progressively decreasing number of outrigger cords; and,

a plurality of retention devices each coupled to one of said outrigger cords to define a retention point for advancing a line longitudinally along the outrigger structure responsive to displacement of said one of said outrigger cords.

13. The system as recited in claim **12**, wherein said at least one cord management unit includes a housing supporting said rotatable pulley members, said housing being fastened to the outrigger structure by a coupling member engaging the outrigger structure.

14. The system as recited in claim **12**, wherein said at least one cord management unit includes a housing supporting said rotatable pulley members and a clamp member fastening said housing to the outrigger structure, said clamp member being releasably locked by a coupling member.

15. The system as recited in claim **12**, wherein each of said cord management units is releasably fastened to the outrigger structure.

16. The system as recited in claim **12**, further comprising a pivot point for each said outrigger cord, said pivot point being laterally offset from the outrigger structure and displaceably retaining said outrigger cord to extend from said pivot point and through predetermined ones of said cord management units in an endless loop.

17. A system for managing outrigger cords for a surface vessel having an outrigger structure, comprising:

a plurality of outrigger cords;

a plurality of cord management units disposed at respective cord management positions longitudinally spaced one from the other along at least a portion of the outrigger structure;

each of said cord management units within the portion of the outrigger structure including a housing secured by at least one fastener against displacement relative to the outrigger structure and a plurality of rotatable pulley members supported by said housing, said pulley members respectively defining a plurality of cord passages transversely offset one from the other and extending at fixed angular orientations relative to the outrigger structure, wherein said cord passages each form a guide groove receiving and guiding a predetermined one of said outrigger cords to maintain independent longitudinal displacement thereof relative to the outrigger structure;

said cord management units being arranged along the outrigger structure portion to cooperatively define consecutive cord management positions to respectively guide a progressively decreasing number of outrigger cords; and,

a plurality of retention devices each coupled to one of said outrigger cords to define a retention point for advancing a line longitudinally along the outrigger structure responsive to displacement of said one of said outrigger cords.

18. The system as recited in claim **17**, wherein said pulley members of each said cord management unit are coaxially disposed.

19. The system as recited in claim **17**, wherein at least one of said cord management units includes at least one bridge member coupled to said housing for displacement between first and second positions, said at least one bridge member in said first position retaining the engagement of at least one of said outrigger cords with a corresponding one of said pulley members.

20. The system as recited in claim **17**, further comprising a pivot point established for each said outrigger cord, said pivot point being laterally offset from the outrigger structure, each said outrigger cord being displaceably retained by said pivot point to extend from said pivot point and through predetermined ones of said cord management units in an endless loop.

* * * * *

EXHIBIT

US011589566B1

(12) **United States Patent**
Mercier

(10) **Patent No.: US 11,589,566 B1**
(45) **Date of Patent: *Feb. 28, 2023**

(54) **OUTRIGGER LINE MANAGEMENT SYSTEM**

(71) Applicant: **Craig Mercier**, Pasadena, MD (US)

(72) Inventor: **Craig Mercier**, Pasadena, MD (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 638 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **15/664,885**

(22) Filed: **Jul. 31, 2017**

Related U.S. Application Data

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(51) **Int. Cl.**
A01K 91/08 (2006.01)
A01K 91/053 (2006.01)
(Continued)

(52) **U.S. Cl.**
CPC ***A01K 91/08*** (2013.01); ***A01K 91/053*** (2013.01); ***A01K 91/18*** (2013.01); ***B63B 21/04*** (2013.01); ***B63B 35/14*** (2013.01)

(58) **Field of Classification Search**
CPC A01K 91/053; A01K 91/08; A01K 91/18; A01K 79/00; A01K 99/00; B63B 35/14; B63B 21/04
(Continued)

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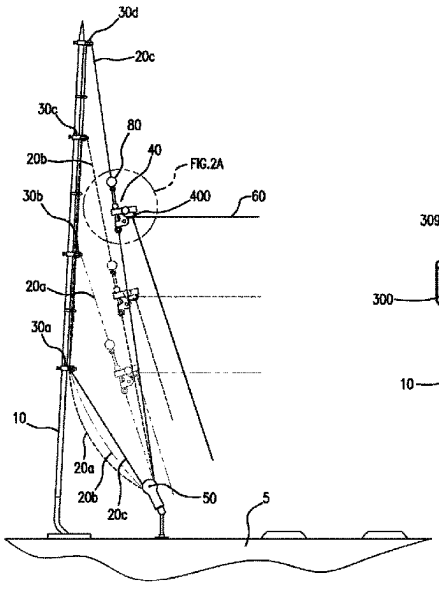
Outrigger Line Kits sold by Malin Marine ("Malin") in 2001. WayBackMachine Internet Archive from Apr. 6, 2001, (originally screen capture of http://web.archive.org/web/20010406175616/http://www.malinco.com/marine/index.html as presented to applicant on Oct. 21, 2015 in related U.S. Appl. No. 90/013,594).
(Continued)

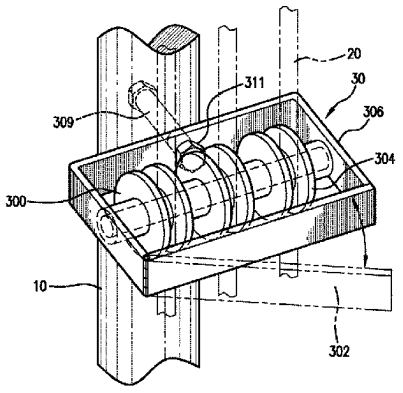
Primary Examiner — Darren W Ark
(74) *Attorney, Agent, or Firm* — Rosenberg, Klein & Lee

(57) **ABSTRACT**

A line management system for an outrigger structure is provided for guiding outrigger cords through cord passages to maintain an independent longitudinal displacement in order to prevent entanglement. The system includes a plurality of outrigger cords, cord management units, and retention devices. The plurality of cord management units are coupled to the outrigger structure and are longitudinally spaced one from the other along the outrigger structure. Each of the cord management units defines a plurality of transversely offset cord passages respectively guiding predetermined ones of outrigger cords to maintain an independent longitudinal displacement relative to the outrigger structure.

17 Claims, 6 Drawing Sheets





Related U.S. Application Data

continuation of application No. 14/188,180, filed on Feb. 24, 2014, now Pat. No. 9,392,778, which is a division of application No. 12/726,695, filed on Mar. 18, 2010, now Pat. No. 8,656,632.

(51) **Int. Cl.**
B63B 35/14 (2006.01)
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(58) **Field of Classification Search**
USPC 43/27.4, 43.12, 43.13, 42.74, 27.2, 21.2; 114/255, 364; 254/405
See application file for complete search history.

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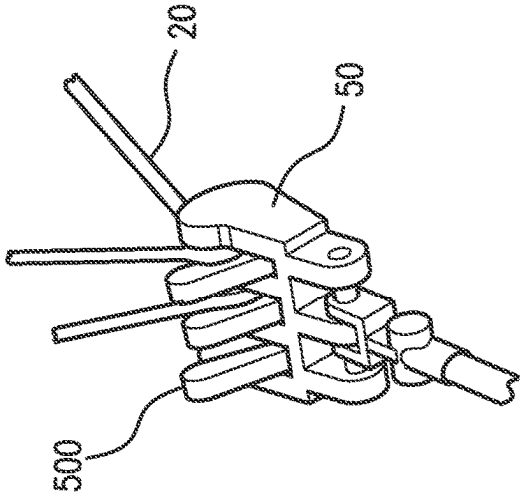


FIG. 1A

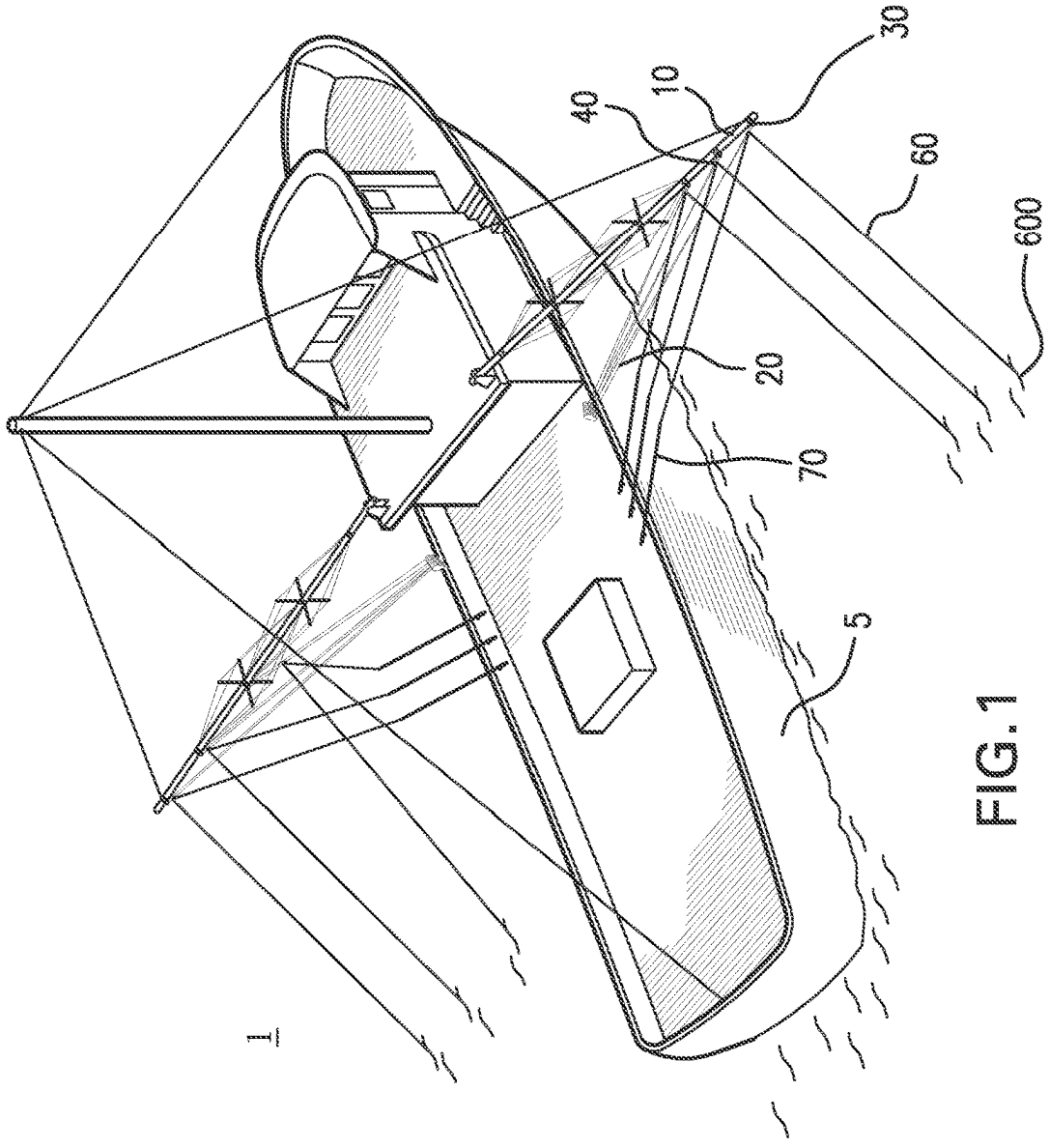
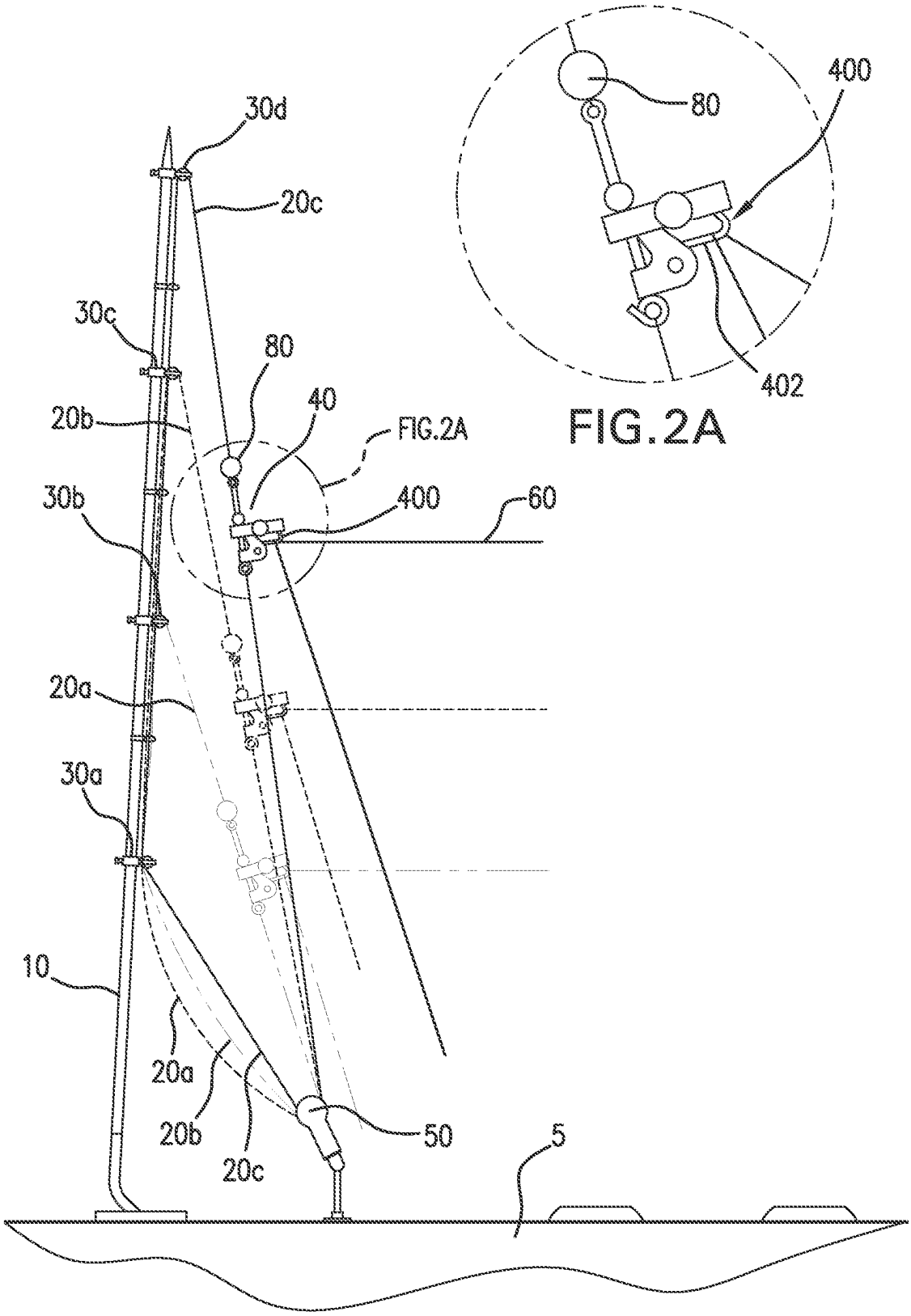


FIG. 1


30d
20c
30c
80
40
20b
FIG.2A
30b
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60
20a
30a
10
20a
20b
20c
50
5

FIG.2

80
400
402

FIG.2A

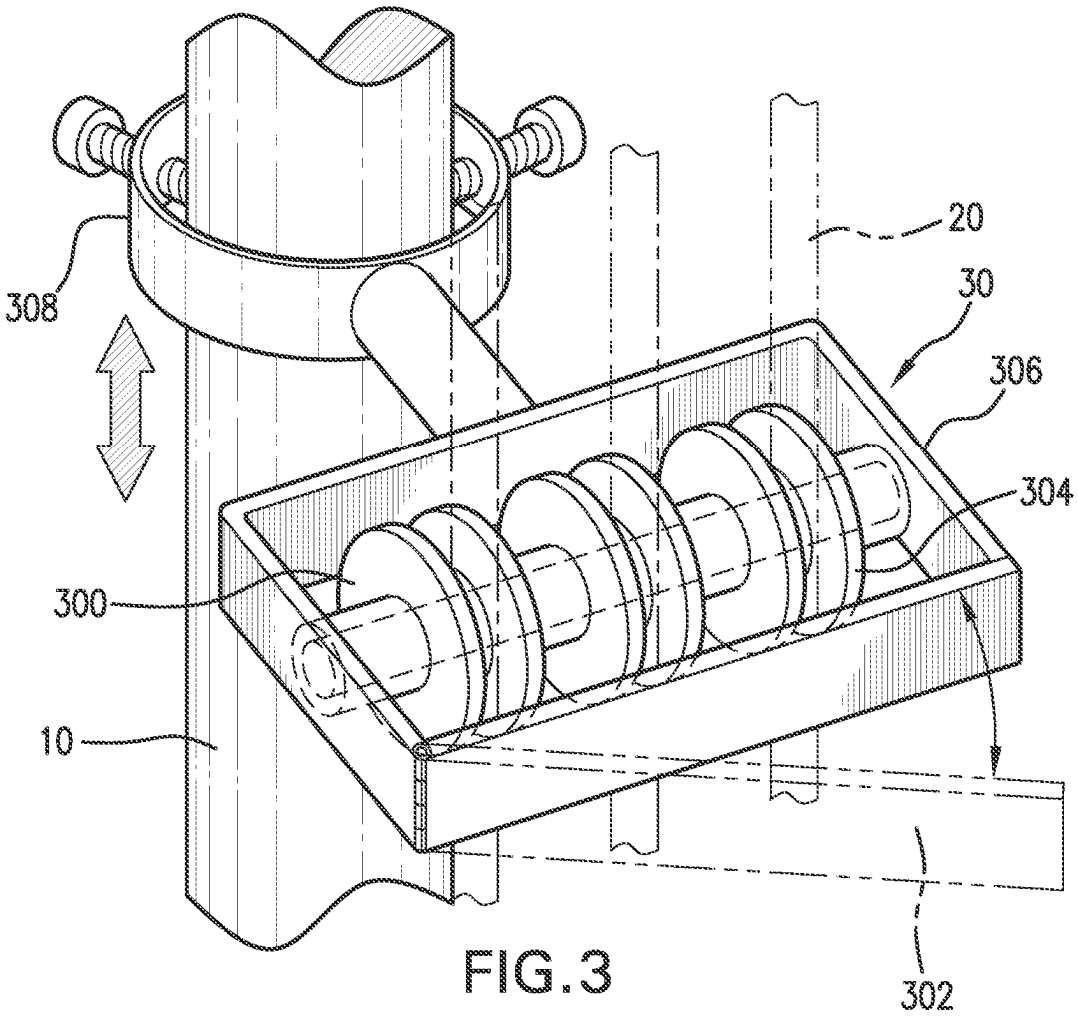


FIG.3

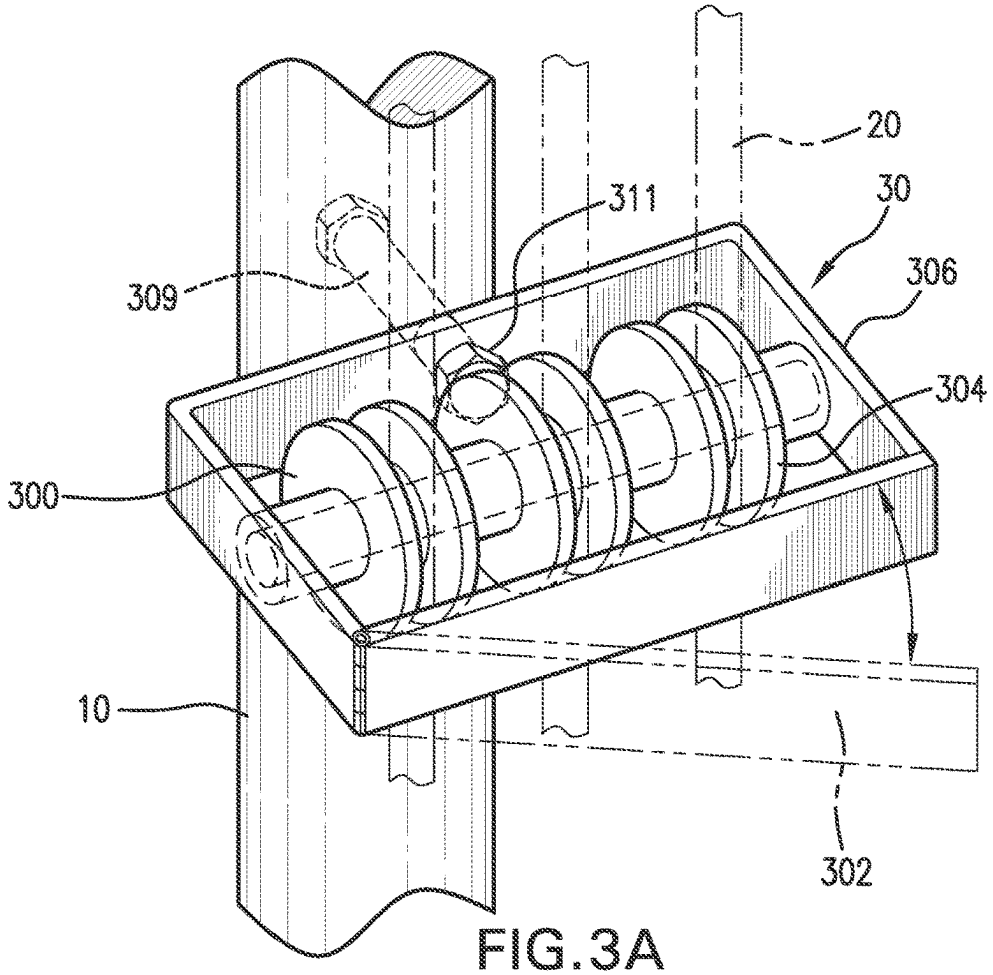


FIG.3A

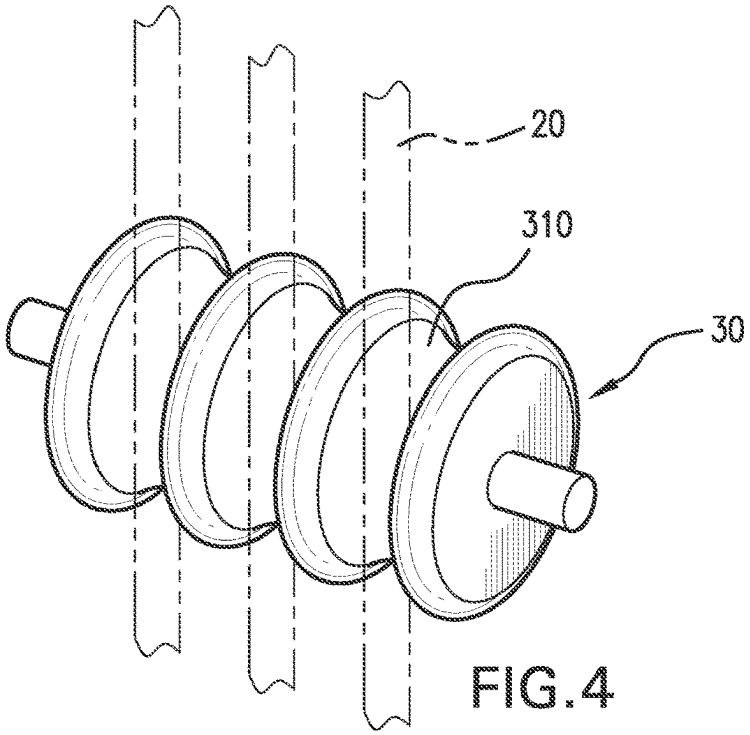


FIG.4

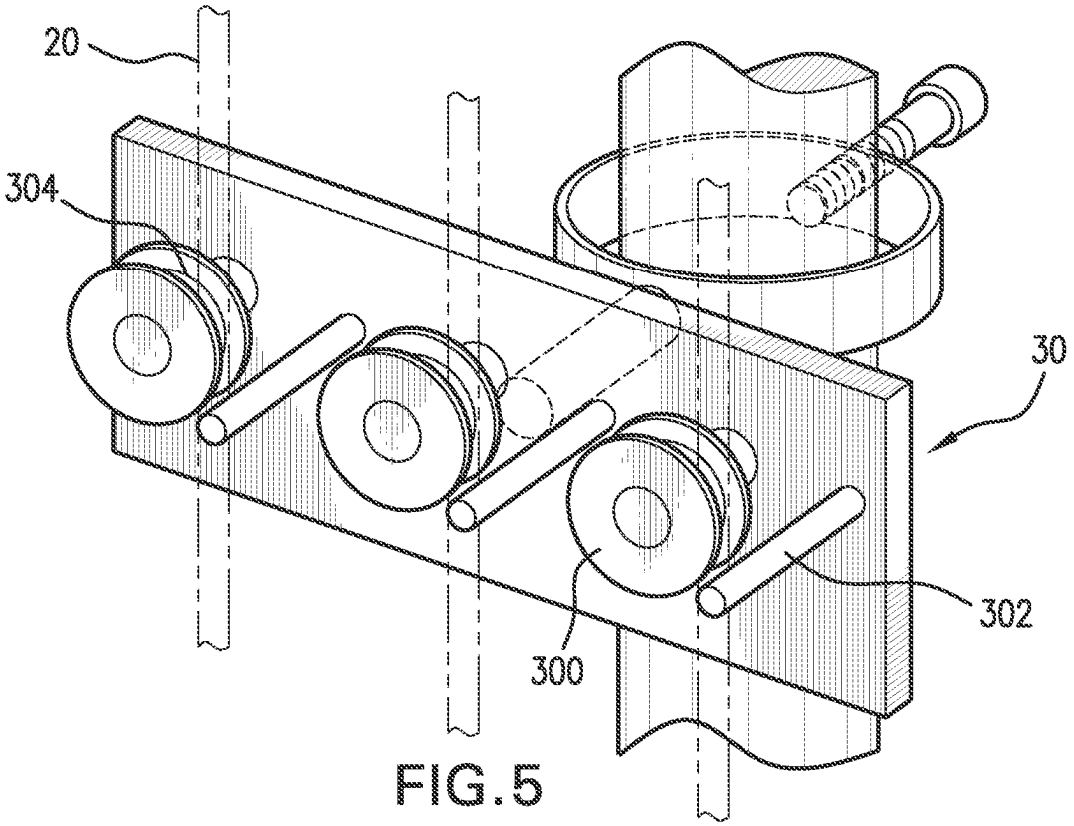


FIG. 5

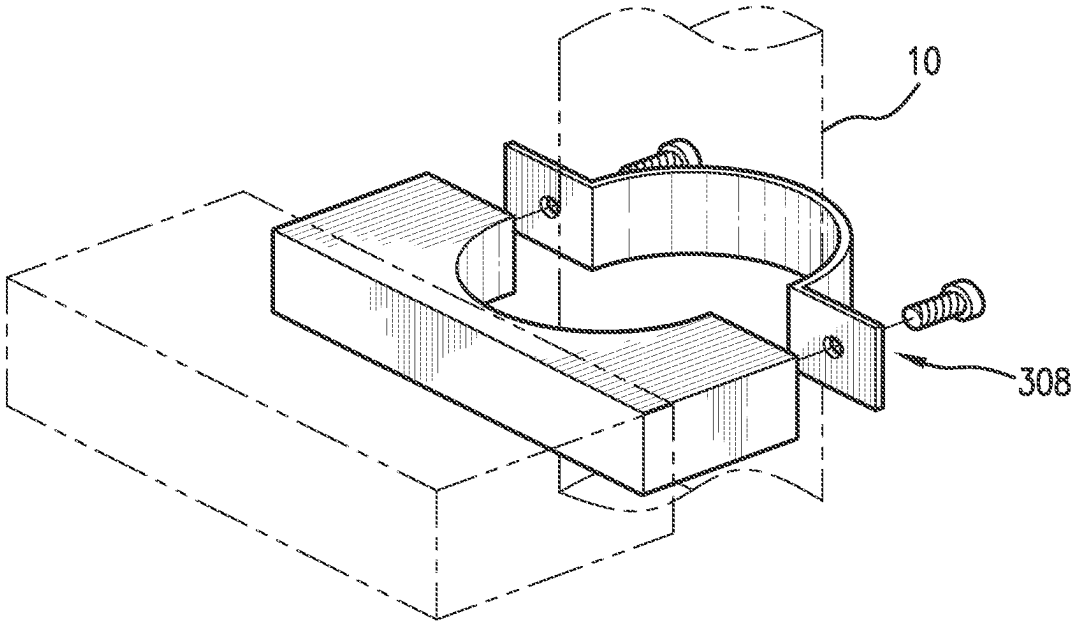


FIG. 6

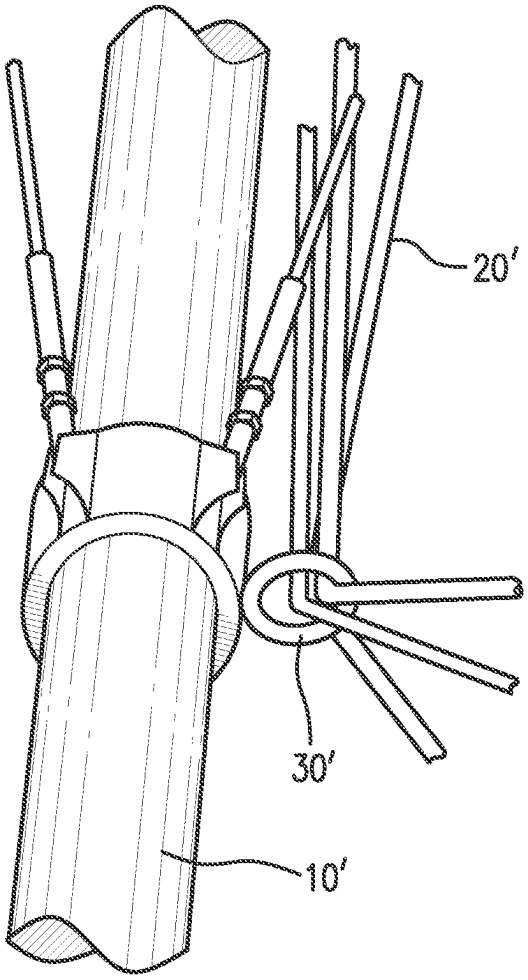


FIG. 7

OUTRIGGER LINE MANAGEMENT SYSTEM

RELATED APPLICATIONS

This application is a Continuation of co-pending application Ser. No. 15/212,571, filed 18 Jul. 2016, which is a Continuation of application Ser. No. 14/188,180, filed 24 Feb. 2014, now U.S. Pat. No. 9,392,778, which is a Divisional of application Ser. No. 12/726,695, filed on 18 Mar. 2010, now U.S. Pat. No. 8,656,632. The entire disclosure of the prior application Ser. No. 15/212,571 is considered a part of the disclosure of the accompanying Continuation application and is hereby incorporated by reference.

BACKGROUND OF THE INVENTION

The subject outrigger line management system is generally directed to a system for enabling convenient displacement of articles along an outrigger structure. More specifically, the outrigger line management system maintains smooth and efficient displacement of individual lines, cords, or other mechanical link employed to so displace articles along a given outrigger support structure.

Outrigger structures are used on surface vessels to extend the lateral reach of the vessel for various purposes. Cast line fishing applications provide one example where outrigger structures provide useful extension of support points for concurrent use of multiple fishing lines. Typically, a fishing rod feeds a fishing line on which one or more baited hooks are provided. The baited ends of the fishing lines are cast into the water to attract fish about the given boat or other surface vessel. Where more than a few fishing lines are so cast from the same vessel into surrounding waters, intertangling remains a persistent problem, particularly where the vessel continues moving to, for example, troll the lines through the water. Tangling becomes an even greater threat when the vessel undergoes abrupt turns or encounters fast moving currents. To prevent such interference and tangling, fishing lines may be supported through one or more pivot points displaced along the length of an outrigger structure. The baited ends of different fishing lines are thereby spaced to be dragged through the water, each held safely away from the vessel and one another to avoid interference.

In this manner, outrigger support structures extend fishing/trolling lines laterally out beyond the wake of a moving boat. They allow the safe deployment of multiple fishing lines cast out from the boat each pivoted at different points along the outrigger structure to remain separated by sufficient fishing space (until release of the lines from their pivot points is triggered) to prevent entanglement.

Outrigger structures are usually installed on a boat to be moved inline with the hull or folded into a mast when not in service. Typically, a pair of outrigger structures are installed at starboard and port gunwale locations.

Known outrigger structures are often provided with a plurality of fixed eyehooks longitudinally spaced therealong. A plurality of outrigger cords are then passed through the eyehooks and a pulley assembly disposed at a fixed point on the boat. Each outrigger cord forms a displaceable loop about the pulley assembly and one or more supporting eyehooks, and each carries a clip on which a fishing line may be secured for movement along an outrigger structure with the outrigger cord. A user may retract or advance the clip by pulling the corresponding outrigger cord in one direction or the other through its loop. So when a fishing line is to be baited, the user pulls one outrigger cord to draw the clip within reach, 'loads' the clip with an appropriately baited fishing line that has been cast, then pulls the outrigger cord in a reverse direction to return the loaded clip to a deployment position on the outrigger structure. This process is repeated for each baited fishing line that has been cast out from a certain point on the boat. When a 'bite' occurs, or when a fishing line encounters sufficient tension, the clip releases, so that the line returns to form a direct line between its feeding point (i.e., fishing rod) for active user control.

This process is not without significant practical obstacles to smooth, proper operation. FIG. **7** depicts a portion of an outrigger structure **10'** having an eye hook **30'** for pivotally retaining its outrigger cords **20'**, as used in the prior art. Normally, multiple outrigger cords **20'** are used to concurrently deploy multiple fishing lines. The multiple outrigger cords **20'** passing through the collar-like eyehook **30'** invariably bunch together during operation, getting tightly intertwined when subjected to tension and manipulation. Much friction results between the tightly packed outrigger cords **20'** themselves, as well as between each cord **20'** and eye hook **30'**. Being that the outrigger cords are normally supported snugly between the eye hook **30'** and other pivot points, a particularly high friction point is created at the sharp bend typically formed at one or more of the eye hooks **30'**. The friction makes it very difficult to displace individual outrigger cords to load and deploy their clips, at least not without mighty physical exertion. Moreover, the considerable friction that must be overcome to effect such cord movement causes premature wearing on the cords themselves.

Various outrigger structures are known in the art. By way of example, U.S. Pat. No. 3,462,870 discloses several embodiments of a fishing system that uses a buoy line maintained in a desired area by an airborne kite. The system can have a plurality of lines operated by a fisherman having a reel with a plurality of spools which may be individually wound without disturbing the others. The lines can also be operated by individual fishermen each having a reel. The individual lines may be secured to the buoy line with a releasable clip that disengages when a fish applies tension to the line, allowing that particular line to be cleared of the remaining fishing lines and to be reeled in.

U.S. Pat. No. 3,060,614 is directed to a multiple pole trolling device for mounting on a boat. The multiple pole trolling devices are spaced apart and rotatably mounted on a pole base that is rotatable and tiltably adjustable. Each of the poles has a fixed trolling line located in the water when set to a rearward position. When the assembly is rotated, the line comes out of the water over the boat so that the fish can be removed.

U.S. Pat. No. 2,196,472 is directed to a fishing apparatus in the form of a tree formed of tubular members that support a plurality of fishing lines. The tree may be thrust into the bottom of a body of water. The mast as shown has a set of screws that may be used to adjust the coaxial tubular members for use in water of different depths.

U.S. Pat. No. 3,358,399 is directed to a kite fishing apparatus having two reels, one for a kite line, and the other for a fishing line. A three-in-one glider-type structure is provided and functions to carry the fishing line over the body of water. The baited end of the fishing line is cast out by the outgoing kite line and by means provided to detachably and adjustably connect the kite line to the fishing line.

U.S. Pat. No. 4,388,774 is directed to a fishing line system for use on a boat that supports six fishing rods each spaced from the other to prevent the fishing lines from tangling during trolling. A pull on either side of the boat is mounted on roller booms that can be extended or retracted as

required. A rearwardly extending pair of fishing poles are carried by holders mounted on the stern of the boat to position lines laterally inward of lines. The booms are disposed transversely to the left of the boat and are supported by antifriction assemblies which support the booms.

A significant drawback remains in the prior art for effectively managing the outrigger cords to enable loading and deploying of articles along an outrigger structure. There is, therefore, a need for a system that enables sufficiently free, unrestricted individual displacement of the outrigger cords along the outrigger structure.

SUMMARY OF THE INVENTION

It is therefore an object of the present invention to provide a line management system for an outrigger structure which maintains guiding outrigger cords in convenient, independently displaceable manner.

These and other objects are attained by the outrigger line management system formed in accordance with the present invention. The system comprises of a plurality of outrigger cords, cord management units, and retention devices. The plurality of cord management units are coupled to the outrigger structure and are longitudinally spaced one from the other along the outrigger structure. Each of the cord management units defines a plurality of transversely offset cord passages respectively guiding predetermined ones of outrigger cords to maintain an independent longitudinal displacement relative to the outrigger structure. The plurality of retention devices are each coupled to one of the outrigger cords. Each of the retention devices defines a retention point for advancing a fishing line longitudinally along the outrigger structure responsive to a displacement of the outrigger cord.

In certain exemplary embodiments, the system also includes a pivot unit laterally offset from the outrigger structure displaceably retaining each of the outrigger cords. Each of the outrigger cords extends from the pivot unit and through predetermined ones of cord management units in an endless loop.

In another exemplary embodiment, a method for managing the outrigger cords comprises the steps of (1) establishing a plurality of outrigger cords, (2) establishing a plurality of cord management positions, (3) defining each cord management positions, (4) arranging the cord management positions, and (5) establishing a plurality of retention devices. The cord management positions are established longitudinally spaced one from the other along the outrigger structure. Each of the cord management positions are then defined to include a plurality of transversely offset cord passages respectively guiding predetermined ones of the outrigger cords to maintain an independent longitudinal displacement relative to the outrigger structure. The cord management positions are arranged to define a portion of the outrigger structure a progressively decreasing number of cord passages. The retention devices are established to define a retention point for advancing a line longitudinally along the outrigger structure responsive to a displacement of the outrigger cord.

Those skilled in the art will appreciate the scope of the present invention and realize aspects thereof after reading the following detailed description of the preferred embodiments in association with the accompanying illustrative figures.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying illustrative figures incorporated in and forming a part of this specification depict several aspects of the invention, and together with the description serve to explain the principles of the invention.

FIG. **1** is a diagram illustrating a view of a line management system installed on a surface vessel in accordance with one exemplary embodiment of the present invention;

FIG. **1**A is a diagram illustrating an enlarged view of the pivot unit in the embodiment depicted in FIG. **1**;

FIG. **2** is a diagram schematically illustrating a portion of the line management system operation on an outrigger structure in accordance with an exemplary embodiment of the present invention;

FIG. **2**A is an exploded plan view of a retention device depicted in FIG. **2**;

FIG. **3** is a perspective view schematically illustrating a cord management unit formed in accordance with an exemplary embodiment of the present invention;

FIG. **3**A is a perspective view schematically illustrating a cord management unit formed in accordance with an alternate embodiment of the present invention;

FIG. **4** is a perspective view of a cord management unit formed in accordance with an alternate embodiment of the present invention;

FIG. **5** is a schematic perspective view of a cord management unit formed in accordance with another alternate embodiment of the present invention;

FIG. **6** is an exploded perspective view of a clamp member formed in accordance with another alternate embodiment of the clamp member depicted in FIG. **5**; and,

FIG. **7** is a perspective view of an eye hook employed in the prior art for guiding cords on an outrigger structure.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The embodiments set forth below represent the necessary information to enable those skilled in the art to practice the invention and illustrate the best mode of practicing the invention. In light of the illustrated figures and the following description, those skilled in the art will understand the concepts of the invention and will recognize applications of these concepts not particularly addressed herein. It should be understood that these concepts and applications fall within the scope of the disclosure and accompanying claims.

Wherever possible in the following description, similar reference numerals will refer to corresponding elements on parts of different Drawings unless otherwise indicated.

Referring to FIGS. **1** and **2**, there is a depiction of an exemplary embodiment of the line management system **1** for a surface vessel or boat **5**. The line management system **1**, installed as shown on a boat, includes a plurality of outrigger cords **20**, a plurality of cord management units **30**, and a plurality of retention devices **40** all coupled to the outrigger structure **10**. As depicted in FIG. **1**, the outrigger structure **10** may be mounted on top of a surface vessel, to the gunwale or bow, or any other suitable part of the vessel for supporting a plurality of articles therealong. System **1** may be applied to various applications to aid in the smooth loading and deployment of suitable articles to be supported along the outrigger structure **10**. The fishing application shown for illustrative purposes herein is but one of numerous such applications where system **1** may be employed in accordance with various aspects of the present invention.

In the fishing application illustrated, the outrigger structure **10** allows the deployment of more fishing lines **60** cast out from the boat each separated from the other by adequate fishing space than would normally be possible. The spacing prevents fishing lines **60** from entangling during trolling

with other fishing lines **60** originating from the same boat **5**. The number of fishing lines **60** being trolled increases the chances of catching fish and permits multiple individuals to fish from the boat **5**. Use of outrigger structure **10** equipped with system **1** in accordance with the present invention mitigates the inherent entanglement risk while preserving ease of use. Each outrigger structure **10** may be suitably formed as one piece, or made up of individual outrigger sections joined together.

In accordance with the present invention, a line management system **1** is coupled to each outrigger structure **10** used for support extension purposes—such as to extend support for a fishing line **60** to the side of a boat during trolling. The line management system **1** is used for safely guiding outrigger cords **20** through cord passages to maintain an independent longitudinal displacement in order to prevent entanglement. Typically, when the outrigger structure **10** is in use, it is extended transversely to the length of a boat **5** for trolling fishing lines **60** coupled to the retention device **40**. The outrigger structure **10** thus serves to increase the span of the boat to allow more fishing lines **60** to be trolled. By way of example, a 28 foot fishing boat having a 16 foot wide fishing platform can have a pair of outrigger structures **10**, with each outrigger structure **10** being 40 foot long. Once the fishing boat **5** is ready to fish, each of the outrigger structures **10** is extended transversely from the boat in opposite directions to effectively create a 96 foot wide fishing platform from which to suspend multiple fishing lines **60**.

In one preferred embodiment, a plurality of outrigger cords **20** are supported along the longitudinal length of the outrigger structure **10** by at least one cord management unit **30**. Typically, a plurality of cord management units **30** is employed, with each cord management unit **30** firmly coupled to the outrigger structure **10**. The cord management units **30** are longitudinally spaced one from the other along the outrigger structure **10**.

Each outrigger cord **20** is coupled with a retention device **40** for securing a retention point **400** on a fishing line **60**. The retention device **40** facilitates individual management of each fishing line **60** during, for example, sport fishing. When multiple baited fishing lines **60** are being cast out from a boat **5**, the retention device **40** allows for each fishing line **60** fed from a certain point on the boat **5**, by a fishing rod **70** for instance, to be maintained without interfering with the other fishing lines **60** being trolled.

Each outrigger cord **20** is preferably looped through a pivot unit **50** spaced from an outrigger structure **10** and at least one cord management unit **30** provided on such outrigger structure **10** (as described in following paragraphs). Each outrigger cord **20** remains longitudinally displaceable relative to the outrigger structure **10** so that a user may retract or advance the retention point **400**. Each of the retention devices **40** defines a retention point **400** for pivotally supporting a fishing line. This retention point **400** is preferably displaceable longitudinally along the outrigger structure responsive to a displacement of the outrigger cord **20**. Typically, the outrigger cord **20** is displaced to retract the retention point **400** or retention device **40** when seeking to attach or manage a fishing line **60**. Once the fishing line **60** is attached to the retention device **40**, the outrigger cord **20** is then advanced by displacing the outrigger cord **20** to a relative position that gives adequate longitudinal spacing with respect to the other fishing lines **60**.

In certain embodiments, the retention device **40** pivotally retains a fishing line **60** at the retention point **400** until sufficient resistance is encountered on the line **60**. When a fish bites the line, for instance, the pull on line **60** will cause its release from the retention device **40**.

Once retracted, a user may bait, then releasably attach a fishing line **60** to a retention point **400**. When the retention point **400** is advanced back out along the given outrigger structure **10**, the retention point preferably serves as a point from which the line's baited end extends into the water. One or more fishing lines **60** may be so retained to extend in pivoted manner from a portion of each outrigger cord **20**, so long as suitable spacing is maintained to avoid undue line cluttering and tangling. In the embodiment illustrated, one retention device **40** is shown connected to each individual cord **20**.

As depicted in FIG. **2**, the outrigger cords **20** are individually coupled to a stop cork **80** that acts to limit the displacement of the outrigger cords past a predetermined point. The stop cork **80** limits the displacement by preventing the retention device **40** from unintentionally getting wedged in the cord management unit **30**.

In the preferred embodiment, the line management system **1** also includes a pivot unit **50** preferably anchored to a fixed point on the boat **5**, laterally offset from the outrigger structure **10** for displaceably retaining a portion of each outrigger cord **20**. The pivot unit **50** acts as a pivotal support about which the outrigger cords **20** may be displaced. Each of the outrigger cords **20** extends from the pivot unit **50** and through respective cord management units **30**, preferably in an endless loop.

In an exemplary embodiment, the pivot unit **50** includes a plurality of rotatable members **500** individually receiving a respective outrigger cord **20**. However, the pivot unit **50** is not limited to a rotatable structure and may be any structure of suitable type to provide a pivot support for displacement of the outrigger cords **20**.

Each retention device **40**, as depicted in FIG. **2**A, is coupled to an outrigger cord **20** and used to transport an intermediate portion of a fishing line **60** relative to outrigger structure **10**. Among other things, the retention device **40** comprises of a clip portion **402** and retention point **400**. The clip portion **402** allows for the free release of the line **60** when the line is caused to apply sufficient resistance pressure thereon.

When multiple fishing lines **60** are being trolled in the water, in the illustrated embodiment, the lines **60** are preferably maintained by system **1** in such a way that each fishing line **60** clears every other fishing line **60** on its way back towards its feed point (such as the corresponding fishing pole **70**) upon released from the clip portion **402**. The originating/feed points of the fishing lines **60** are suitably arranged, so that when one fishing line **60** releases from its retention device **40**, the fishing line **60** does not physically contact or otherwise interfere with the other deployed fishing lines **60** on its return to a direct line extension from the originating point. It is not unusual to have the retention devices **40** coupled to respective outrigger cords **20** to be displaced in height 8 feet relative to each other, to ensure a clear path of return as a direct line from the feed point (to the water) is restored by a released fishing line **60**.

In a typical application, one end of a fishing line **60** may be fed to originate from a fishing rod **70** temporarily secured to a support bracket provided on the boat **5**. A distal end **600** is baited and drawn in the water during trolling. The retention point **400** is located between the originating end and distal end **600** of the fishing line. The retention point **400** provides a pivot point from which the distal portion (having the end **600**) of the fishing line **60** may be suspended from the outrigger structure **10** for safe trolling. The clip portion

402, which may be made of any suitably resilient or rigid material having enough structural strength to hold the fishing line 60 in place, is configured to open when there is tension on the fishing line 60. For example, when a fish takes the bait at the distal end 600 of the fishing line 60 and causes sufficient tension thereon, the clip portion 402 of the retention device 40 will release. Thereafter, the fishing line 60 must be re-loaded onto the retention device 40 if that line is to be deployed again at its trolling position.

To re-couple fishing line 60 (to re-load a retention device 40), the particular outrigger cord 20 for the clip portion 402 that released the fishing line 60 is pulled to draw the retention device 40/clip portion 402 back in towards the boat until it is within a user's reach. The clip portion 402 is re-loaded by coupling a newly-baited fishing line 60. Once the retention device 40 is drawn in for re-coupling, the clip portion 402 may be snapped open or pulled away from the retention device 40 to an open position so that the fishing line 60 may be hooked by the retention point 400. Thereafter, the retention device 40 is advanced outward again by accordingly displacing its outrigger cord 20. In accordance with one aspect of the present invention, the outrigger cords 20 are independently maintained along respective transversely offset cord passages 304 as described in following paragraphs, such that each may be freely displaced, and the longitudinal displacement of any of the outrigger cords 20 will not interfere with the rest of the outrigger cords 20.

As depicted in FIG. 3, the line management system 1 also includes at least one a cord management unit 30 for each cord 20. In broad concept, the cord management unit 30 defines a plurality of transversely offset cord passages 304 which independently guide the outrigger cords 20 longitudinally along the outrigger structure 10. The cord management unit 30 allows for multiple outrigger cords 20 to be independently controlled without undue interference from the other outrigger cords 20.

Each cord management unit 30 preferably includes independently displaceable pulley members 300 to engage respective outrigger cords 20. In the disclosed embodiment, the pulley members 300 are made wheel-like to be freely rotatable. Since each pulley member 300 is freely rotatable and exposed to the weather elements on the boat, suitable measures may be necessary to weatherize said pulley members 300, depending on the specific requirements of a particular application. For example, the pulley members 300 may be suitably sealed. Preferably, the pulley members 300 are made of composite, wood, metal, or other such material having enough strength and resilience to withstand the environmental elements, friction, and forces that the members would be typically subjected to during use.

The pulley members 300 define transversely offset cord passages 304 whose concave profiles are directed radially outward to receive and guide respective outrigger cords 20, and maintain their independent longitudinal displacement relative to the outrigger structure 10. The transversely offset cord passages 304 may are formed with annular grooves 310 having, for example U-shaped or V-shaped sectional profiles. The annular grooves 310 are configured to provide lateral support and containment sufficient to avoid slippage of the outrigger cords 20 therefrom.

In preferred embodiments, a plurality of cord management units 30 are arranged along a length of each outrigger structure 10, so that decreasing numbers of transversely offset cord passages 304 are provided by successive unit 30. For example, a system 1 configured to support three separate outrigger cords 20*a*, 20*b*, 20*c* on an outrigger structure 10, as illustrated in FIG. 2, would employ with the pivot unit 50 four cord management units 30*a*, 30*b*, 30*c*, 30*d*. The cord management units 30*a*-30*d* are then arranged to define, along a portion of the outrigger structure 10, a progressively decreasing number of cord passages 304.

In the embodiment illustrated in FIG. 2, for example, the first two cord management units 30*a*, 30*b* closest to the boat 5, would preferably each define three cord passages 304 to participate in guiding all three outrigger cords 20*a*, 20*b*, 20*c*. The third cord management unit 30*c* would preferably define one less cord passage, or two cord passages 304, to participate in guiding just two of the outrigger cords 20*b*, 20*c*, since the first outrigger cord 20*a* pivots at the second cord management unit 30*b* to return to the pivot unit 50. The next cord management unit 30*d* may then define even fewer cord passages, or one cord passage 304 in this case, to participate in guiding the one remaining outrigger cords 20*c*, since the first outrigger cord 20*b* pivots at the third cord management unit 30*c* to return to the pivot unit 50.

In certain alternate embodiments, of course, the number of cord management units 30, as well as the arrangement and extent of cord passages defined by respective cord management units 30, may be varied to suit the particular requirements of the intended applications. While not the most efficient, for example, each outrigger cord 20 may be looped about the pivot unit 50 and a set of cord management units 30 whose cord passages pass that outrigger cord 20 only, to the exclusion of the other outrigger cords 20. Each cord management unit might then need to define but one cord passage, but measures would be required to ensure that the cord passages of one cord management unit set (for a given cord 20) are maintained in sufficiently transversely offset manner from the cord passages defined by an adjacent set of such units (for another cord 20) to avoid interfering contact.

In certain other alternate embodiments, one or more of the cord management units 30 may be of modular configuration to facilitate flexible adaptation to different applications. For example, individual pulley member modules 300 may be disposed in replaceable manner within the housing 306 of a cord management unit 30, such that numbers and even the precise positions of the individual pulley or other members 300 within the unit 30 may be adjustably varied to suit different needs. Suitable measures would then be employed to enable such individual replacement of a pulley member module 30, or its re-positioning, within the housing 306.

In preferred embodiments, the pulley members 300 are coaxially aligned, sharing the same shaft. The outrigger cords 20 are secured in the cord passages 304 by a bridge member 302. Preferably, the bridge member 302 is reconfigurably coupled to a housing 306 structure to contain the plurality of outrigger cords 20 in one position and allow their removal in another. The housing 306 is suitably formed to provide structural support and containment for the pulley members 300 and the outrigger cords 20. In the embodiment of FIG. 3, the bridge member 302 is displaceable relative to the pulley members 300 about a hinged coupling between the first and second positions. The first and second positions represent open and closed positions respectively. The plurality of cord management units 30 are longitudinally spaced along the outrigger structure 10 and their housings 306 releasably fastened by clamp member 308. The clamp member 308 may be sleeved onto the outrigger structure 10, selectively positioned on the outrigger structure 10, and fastened by a bolt, snap, strap, fire tie, cable, or other such suitable fastening measures known in the art. The fasteners serve to secure the clamp member 308 to the outrigger

structure **10** to prevent the cord management unit **30** from being unintentionally displaced relative to the outrigger structure **10**.

FIG. **3**A is an alternate embodiment of the line management system **1** depicted in FIG. **3**. The line management system **1** also includes at least one a cord management unit **30** for each cord **20**. In broad concept, the cord management unit **30** defines a plurality of transversely offset cord passages **304** which independently guide the outrigger cords **20** longitudinally along the outrigger structure **10**. The cord management unit **30** allows for multiple outrigger cords **20** to be independently controlled without undue interference from the other outrigger cords **20**.

Each cord management unit **30** preferably includes independently displaceable pulley members **300** to engage respective outrigger cords **20**. In the disclosed embodiment, the pulley members **300** are made wheel-like to be freely rotatable. Since each pulley member **300** is freely rotatable and exposed to the weather elements on the boat, suitable measures may be necessary to weatherize said pulley members **300**, depending on the specific requirements of a particular application. For example, the pulley members **300** may be suitably sealed. Preferably, the pulley members **300** are made of composite, wood, metal, or other such material having enough strength and resilience to withstand the environmental elements, friction, and forces that the members would be typically subjected to during use.

The pulley members **300** define transversely offset cord passages **304** whose concave profiles are directed radially outward to receive and guide respective outrigger cords **20**, and maintain their independent longitudinal displacement relative to the outrigger structure **10**. The transversely offset cord passages **304** may are formed with annular grooves **310** having, for example U-shaped or V-shaped sectional profiles. The annular grooves **310** are configured to provide lateral support and containment sufficient to avoid slippage of the outrigger cords **20** therefrom.

In preferred embodiments, a plurality of cord management units **30** are arranged along a length of each outrigger structure **10**, so that decreasing numbers of transversely offset cord passages **304** are provided by successive unit **30**. For example, a system **1** configured to support three separate outrigger cords **20***a*, **20***b*, **20***c* on an outrigger structure **10**, as illustrated in FIG. **2**, would employ with the pivot unit **50** four cord management units **30***a*, **30***b*, **30***c*, **30***d*. The cord management units **30***a*-**30***d* are then arranged to define, along a portion of the outrigger structure **10**, a progressively decreasing number of cord passages **304**.

In the embodiment illustrated in FIG. **2**, for example, the first two cord management units **30***a*, **30***b* closest to the boat **5**, would preferably each define three cord passages **304** to participate in guiding all three outrigger cords **20***a*, **20***b*, **20***c*. The third cord management unit **30***c* would preferably define one less cord passage, or two cord passages **304**, to participate in guiding just two of the outrigger cords **20***b*, **20***c*, since the first outrigger cord **20***a* pivots at the second cord management unit **30***b* to return to the pivot unit **50**. The next cord management unit **30***d* may then define even fewer cord passages, or one cord passage **304** in this case, to participate in guiding the one remaining outrigger cords **20***c*, since the first outrigger cord **20***b* pivots at the third cord management unit **30***c* to return to the pivot unit **50**.

In certain alternate embodiments, of course, the number of cord management units **30**, as well as the arrangement and extent of cord passages defined by respective cord management units **30**, may be varied to suit the particular requirements of the intended applications. While not the most efficient, for example, each outrigger cord **20** may be looped about the pivot unit **50** and a set of cord management units **30** whose cord passages pass that outrigger cord **20** only, to the exclusion of the other outrigger cords **20**. Each cord management unit might then need to define but one cord passage, but measures would be required to ensure that the cord passages of one cord management unit set (for a given cord **20**) are maintained in sufficiently transversely offset manner from the cord passages defined by an adjacent set of such units (for another cord **20**) to avoid interfering contact.

In certain other alternate embodiments, one or more of the cord management units **30** may be of modular configuration to facilitate flexible adaptation to different applications. For example, individual pulley member modules **300** may be disposed in replaceable manner within the housing **306** of a cord management unit **30**, such that numbers and even the precise positions of the individual pulley or other members **300** within the unit **30** may be adjustably varied to suit different needs. Suitable measures would then be employed to enable such individual replacement of a pulley member module **30**, or its re-positioning, within the housing **306**.

In preferred embodiments, the pulley members **300** are coaxially aligned, sharing the same shaft. The outrigger cords **20** are secured in the cord passages **304** by a bridge member **302**. Preferably, the bridge member **302** is reconfigurably coupled to a housing **306** structure to contain the plurality of outrigger cords **20** in one position and allow their removal in another. The housing **306** is suitably formed to provide structural support and containment for the pulley members **300** and the outrigger cords **20**. In the embodiment of FIG. **3**, the bridge member **302** is displaceable relative to the pulley members **300** about a hinged coupling between the first and second positions. The first and second positions represent open and closed positions respectively.

In this embodiment, the housing **306** is coupled to the outrigger structure **10** by a coupling member **309** that is secured by a securing member **311**. The coupling member **309** may be a bolt, snap, strap, fire tie, cable, or other such suitable fastening measures known in the art. The coupling member **309** serve to secure the housing **306** to the outrigger structure **10** to prevent the cord management unit **30** from being unintentionally displaced relative to the outrigger structure **10**.

The plurality of cord management units **30** are longitudinally spaced along the outrigger structure **10** and their housings **306** releasably fastened by coupling member **309** that is secured by a securing member **311**. The coupling member **309** may be a bolt, snap, strap, fire tie, cable, or other such suitable fastening measures known in the art. The coupling member **309** serve to secure the housing **306** to the outrigger structure **10** to prevent the cord management unit **30** from being unintentionally displaced relative to the outrigger structure **10**.

In certain alternate embodiments, such as depicted in FIG. **4**, the cord management unit **30** may include a spool-like structure that is integrally formed with a plurality of grooves **310** for receiving respective outrigger cords **20**. The cord passages **304** defined within the grooves **310** may be formed of materials with a very low friction coefficient so as to allow individual outrigger cords **20** to smoothly glide along them when displaced. Among other things, the low friction material making up the cord passage **304** in this embodiment would obviate the need for independent pulley members **300** as depicted in FIG. **3**. However, this embodiment has the drawback of generating more friction between the outrigger cords **20** and the respective receiving grooves **310**.

FIG. **5** depicts another alternate embodiment of cord management unit **30**. In this embodiment, the independently displaceable pulley members **300** define cord passages **304** that are laterally offset one from the other to respectively guide outrigger cords **20** to maintain independent longitudinal displacement relative to the outrigger structure. The independent pulley members **300** are respectively coupled to individual shafts which allow independent rotation of each pulley member **300**. Each bridge member **302** is provided as shown to guard against unwanted release of a cord **20** from its pulley member **300**, and thereby retain the outrigger cords **20** operably engaged with the pulley members **300**.

With respect to FIG. **6**, there is shown an alternate embodiment of clamp member **308**. In this embodiment, the clamp member **308** is made up of two separate pieces contoured to conform and easily fasten to the given outrigger structure **10**. The clamp member **308** may be releasably fastened by clamping the separate pieces about the outrigger structure **10** and securing the same with a fastener. The fastener may be a bolt, snap, strap, fire tie, or any other suitable means for fastening the collar-like clamp member **308** pieces to the outrigger structure **10**.

The clamping/fastening measures shown in the illustrated embodiments enable each cord management unit **30** to be retrofitted to existing outrigger structures **10**. The clamp member **308** may be sleeved onto the outrigger structure **10** or releasably fastened by a suitable fastener. Alternatively, where requirements permit, one or more cord management units **30** may also be formed as a fixed or integral part of an outrigger structure **10** itself.

The application of the cord management system **1** of the present inventions is not limited necessarily to fishing. Its use is relevant in any application that requires an outrigger structure, on or off water, where effective management of outrigger cords **20** is necessary to realize the benefits of the structure. For example, system **1** may be employed to set and deploy traps, set and service instrument buoys, or otherwise facilitate the outrigger-aided use and deployment of various other such articles.

The illustrated embodiments implement a method for managing the outrigger cords which generally includes the steps of: (1) establishing a plurality of outrigger cords **20**, (2) establishing a plurality of cord management positions, (3) defining at each cord management position a plurality of transversely offset cord passages **304**, (4) arranging the cord management positions, and (5) establishing a plurality of retention devices **40**. The cord management positions are established longitudinally spaced one from the other along the outrigger structure **10**. A plurality of transversely offset cord passages **304** are defined at certain of the cord management positions to respectively guide predetermined ones of the outrigger cords **20** to maintain independent longitudinal displacement relative to the outrigger structure **10**. The cord management positions **304** are arranged to define along at least a portion of the outrigger structure **10** a progressively decreasing number of cord passages **304**. The retention devices **40** are thereby established to each define a retention point **400** for advancing a line longitudinally along the outrigger structure **10** responsive to a displacement of the outrigger cord **20**.

Although this invention has been described in connection with specific forms and embodiments thereof, it will be appreciated that various modifications other than those discussed above may be resorted to without departing from the spirit or scope of the invention as defined in the appended claims. For example, functionally equivalent elements may be substituted for those specifically shown and described, certain features may be used independently of other features, and in certain cases, particular locations of the elements as well as particular method steps may be reversed or interposed, all without departing from the spirit or scope of the invention as defined in the appended claims.

What is claimed is:

1. An outrigger cord management apparatus for guiding a plurality of outrigger cords along a longitudinally extended outrigger structure of a surface vessel, the outrigger cords each having coupled thereto at least one retention device, each of said at least one retention device defining a retention point for a line advanced along the outrigger structure responsive to displacement of each of the outrigger cords thereof, the outrigger cord management apparatus comprising:

at least one outrigger structure extending beyond a surface vessel,

a plurality of outrigger cords,

a plurality of cord management units coupled to said at least one outrigger structure in a spaced apart relationship with one another,

a pivot unit attached to said surface vessel in a spaced relationship with said at least one outrigger structure, each of said outrigger cords being operatively coupled between said pivot unit and at least one respective cord management unit of said plurality of cord management units and forming a cord endless loop configuration, and

a plurality of lines, wherein each of said plurality of lines is removably attached, at one end thereof, to the retention point of a respective said at least one retention device coupled to a respective outrigger cord of said plurality of outrigger cords, wherein a position of said each of said plurality of lines is controlled by displacing the retention point of the respective said at least one retention device longitudinally along said at least one outrigger structure responsive to a controlled displacement of said respective outrigger cord, and wherein said at least one respective cord management unit includes:

a housing portion;

a releasable fastening portion coupled to said housing portion, said releasable fastening portion being configured to fixedly mount said housing portion intermediately along said at least one outrigger structure extending beyond a surface vessel to thereby extend said housing portion laterally from said at least one outrigger structure; and

a rotatable portion rotatably coupled to said housing portion, said rotatable portion defining a plurality of cord passages transversely offset one from the other and configured for respectively independently guiding said each of said plurality of outrigger cords longitudinally along said at least one outrigger structure when said housing portion is mounted thereto;

wherein said housing and rotatable portions are configured to maintain the cord passages about a common axis fixed in angle relative to said at least one outrigger structure when said housing portion is mounted thereto by said releasable fastening portion, and

wherein said rotatable portion is configured to enable said plurality of outrigger cords to be independently and simultaneously controlled for displacement without undue interference of any one of said plurality of outrigger cords with other of said plurality of outrigger cords.

2. The apparatus as recited in claim 1, wherein said rotatable portion is configured with guide grooves forming said cord passages, each said guide groove being configured to receive one of said outrigger cords.

3. The apparatus as recited in claim 1, wherein said rotatable portion includes a plurality of rotatable pulley members respectively defining said cord passages.

4. The apparatus as recited in claim 3, wherein said releasable fastening portion includes a coupling member for securely engaging the said at least one outrigger structure.

5. The apparatus as recited in claim 3, wherein said rotatable pulley members are coaxially disposed along said housing portion.

6. The apparatus as recited in claim 1, wherein said releasable fastening portion further comprising a clamp member securely mounting said housing to the at least one outrigger structure, said clamp member being releasably locked by a coupling member.

7. The apparatus as recited in claim 1, further comprising at least one pivot point established by said pivot unit for each of said outrigger cords to be guided, said at least one pivot point being laterally offset from said housing portion, the cord passages of said rotatable portion and said at least one pivot point being arranged to support said cord endless loop configuration for each of said outrigger cords to be guided.

8. The apparatus as recited in claim 1, wherein said at least one retention device further comprising a clip portion configured for releasably retaining a line of said plurality of lines and a stop cork coupled to each of said outrigger cords and positioned relative to said at least one retention device, said retention device being fixed relative to each of said plurality of outrigger cords.

9. An outrigger cord management apparatus for guiding a plurality of outrigger cords along a longitudinally extended outrigger structure of a surface vessel, the outrigger cords each having coupled thereto at least one retention device defining a retention point for a line advanced along the outrigger structure responsive to displacement of each of the outrigger cords thereof, the outrigger cord management apparatus comprising:

at least one outrigger structure extending beyond a surface vessel,

a plurality of outrigger cords,

a plurality of cord management units coupled to said at least one outrigger structure in a spaced apart relationship with one another,

a pivot unit attached to said surface vessel in a spaced relationship with said at least one outrigger structure, each of said outrigger cords being operatively coupled between said pivot unit and said at least one respective cord management unit of said plurality of cord management units and forming a cord endless loop configuration, and

a plurality of lines, wherein each of said plurality of lines is removably attached, at one end thereof, to the retention point of a respective said at least one retention device coupled to a respective outrigger cord of said plurality of outrigger cords, wherein a position of said each of said plurality of lines is controlled by displacing the retention point of the respective said at least one retention device longitudinally along said at least one outrigger structure responsive to a controlled displacement of said respective outrigger cord, and wherein said at least one respective cord management unit includes:

a housing portion;

a releasable fastening portion coupled to said housing portion, said releasable fastening portion being configured to releasably secure said housing portion intermediately along said at least one outrigger structure extending beyond a surface vessel to thereby extend said housing portion laterally from said at least one outrigger structure; and,

a rotatable portion rotatably coupled to said housing portion, said rotatable portion defining a plurality of cord passages transversely offset one from the other and configured for respectively independently guiding each of said plurality of outrigger cords longitudinally along said at least one outrigger structure when said housing portion is mounted thereto;

wherein said housing and rotatable portions are configured to define on the at least one outrigger structure a cord management assembly releasably maintaining the cord passages about a common axis fixed in angle relative to said at least one outrigger structure when said housing portion is mounted thereto by said releasable fastening portion, and

wherein said rotatable portion is configured to enable said plurality of outrigger cords to be independently and simultaneously controlled for displacement without undue interference of any one of said plurality of outrigger cords with other of said plurality of outrigger cords.

10. The apparatus as recited in claim 9, wherein said rotatable portion is configured with guide grooves forming said cord passages, each said guide groove being configured to receive one of said outrigger cords.

11. The apparatus as recited in claim 9, wherein said rotatable portion includes a plurality of rotatable pulley members respectively defining said cord passages.

12. The apparatus as recited in claim 11, wherein said rotatable pulley members are coaxially disposed along said housing portion.

13. The apparatus as recited in claim 9, wherein said releasable fastening portion includes a coupling member for releasably securing said cord management assembly relative to said at least one outrigger structure.

14. An outrigger cord management apparatus for guiding a plurality of outrigger cords along a longitudinally extended outrigger structure of a surface vessel, the outrigger cords each having coupled thereto at least one retention device defining a retention point for a line advanced along the outrigger structure responsive to displacement of each of the outrigger cord thereof, the outrigger cord management apparatus comprising:

at least one outrigger structure extending beyond a surface vessel,

a plurality of outrigger cords,

a plurality of cord management units coupled to said at least one outrigger structure in a spaced apart relationship with one another,

a pivot unit attached to said surface vessel in a spaced relationship with said at least one outrigger structure, each of said outrigger cords being operatively coupled between said pivot unit and at least one respective cord management unit of said plurality of cord management units and forming a cord endless loop configuration, and

a plurality of lines, wherein each of said plurality of lines is removably attached, at one end thereof, to the retention point of a respective said at least one retention device coupled to a respective outrigger cord of said plurality of outrigger cords, wherein a position of said

each of said plurality of lines is controlled by displacing the retention point of the respective at least one retention device longitudinally along said at least one outrigger structure responsive to a controlled displacement of said respective outrigger cord, and wherein said at least one respective cord management unit includes:

a housing portion;

a releasable fastening portion coupled to said housing portion, said releasable fastening portion being configured to releasably lock said housing portion intermediately along said at least one outrigger structure extending beyond a surface vessel to thereby extend said housing portion laterally from said at least one outrigger structure; and

at least one rotatable portion including a plurality of rotatable pulley members, each of said rotatable pulley members being independently rotatably coupled to said housing portion to define a plurality of cord passages transversely offset one from the other, said cord passages being configured for respectively guiding said plurality of outrigger cords longitudinally along said at least one outrigger structure when said housing portion is mounted thereto;

wherein said housing and rotatable portions are configured to define on said at least one outrigger structure a cord management assembly maintaining the cord passages about a common axis fixed in angle relative to said at least one outrigger structure when said housing portion is mounted thereto by said releasable fastening portion, and

wherein said rotatable portion is configured to enable said plurality of outrigger cords to be independently and simultaneously controlled for displacement without undue interference of any one of said plurality of outrigger cords with other of said plurality of outrigger cords.

15. The apparatus as recited in claim **14**, wherein said rotatable pulley members are configured with guide grooves forming said cord passages, each said groove being configured to receive one of said outrigger cords.

16. The apparatus as recited in claim **15**, wherein said rotatable pulley members are coaxially disposed along said housing portion.

17. The apparatus as recited in claim **14**, wherein said releasable fastening portion includes a coupling member for releasably locking said cord management assembly relative to said at least one outrigger structure.

* * * * *

EXHIBIT E

COLLAPSIBLE BACK BAR

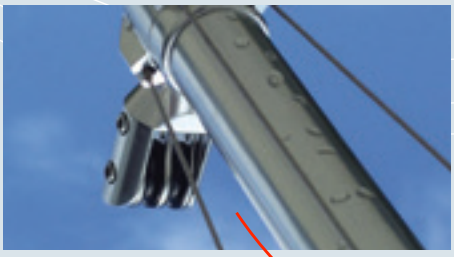
Easily lower your riggers to clear bridges and other obstacles. Rupp's innovative latch releases smoothly and returns to lock firmly in place. Collapsible back bars make re-rigging, cleaning and waxing your outriggers a snap! Available for Tournament and Bigg Rigg outriggers.

DESCRIPTION	PART #
TOURN. COLLAPSIBLE BACK BAR	A0-0000-CBB
BIGG RIGG COLLAPSIBLE BACK BAR	A0-BRXX-CBB

PULLEYS & PULLEY CLUSTERS

Rupp pulley clusters, eliminate eye-bolt and halyard line chafing by adding a roller pulley in place of each outrigger eye-bolt.

TYPE	PART #
SINGLE PULLEY CLUSTER	CA-0144
DOUBLE PULLEY CLUSTER	CA-0145
TRIPLE PULLEY CLUSTER	CA-0146



PULL ROPES

Set and retrieve your riggers with these first class pull ropes. Rupp pull ropes feature heavy duty stainless steel hooks and braided nylon rope. Sold individually.

PART # CA-0029

OUTRIGGER BACKING PLATE

Anodized aluminum backing plates for Rupprigger oval bases. With a polished finish, these are ideal for applications where backing hardware is visible.

PART # 03-1057-23

"Pulley Clusters"

"Outriggers with Pulley Clusters"

ALL PURPOSE CLAMPS

Rupp's popular Clamp-on Fittings are available in a basic two-piece design, ready to be used for your special applications. Made of extruded aircraft alloy with a polished and anodized finish. These fittings are ideal to fabricate custom pieces for your towers and tops. Available in all popular sizes.

PIPE SIZE	I.D OF CLAMP	PART #
0.75"	1.050"	11-1447-23
1.00" TUBE	1.00"	11-1442-23
1.00"	1.315"	11-1443-23
1.25"	1.660"	11-1444-23
1.50"	1.90"	11-1445-23

SPREADER TIP ASSEMBLY

Replacement spreader tips for Rupp outriggers. Black Delrin spreader tips complete with O-rings.

PART # 03-1033-AS

CONTROL KNOBS

Elegance at your fingertips with these beautiful knobs for Morse controls. Anodized aluminum available in two colors adds that special touch of class to any boat. Specify gold or silver when ordering.

PART # 03-1226-23

BUSHING KIT

Replace lost and worn out sleeves and bushings. Kit contains enough Delrin pieces for a pair of Rupp outriggers.

DESCRIPTION	PART#
DELRIN BUSHINGS ONLY	CA-0032
BUSHINGS, NUTS & BOLTS	CA-0033

SUPER LUBE®

A patented, multi-purpose synthetic lubricant, containing SYNCOLON® (PTFE) particles held in suspension. Super Lube lasts longer and outperforms conventional petroleum-based greases and oils. Available as a 3 oz. tube in grease form.

PART # MI-0009

REPLACEMENT PARTS

Contact Rupp Marine for complete assortment of replacement parts. Reference serial number tag on outrigger base when ordering.

MOST COMMON REPLACEMENT PARTS ARE AVAILABLE AT RUPPMARINE.COM

TOP GUN TELESCOPING POLES

1.50 INCH POLES

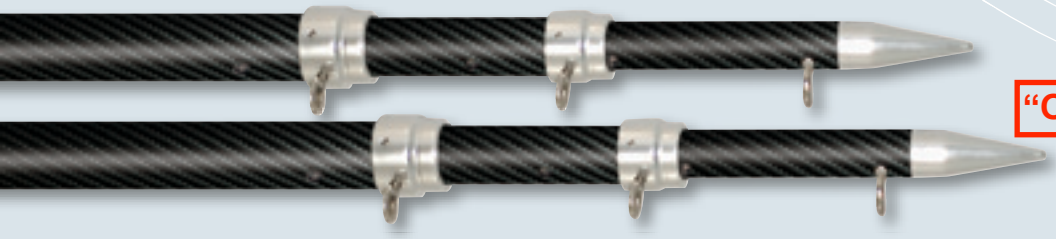
HEAVY DUTY TOP GUN TELESCOPING POLES

Rupp telescoping outrigger poles are available in 15 and 18 foot lengths. These poles are comprised of three sections making them the most rigid and durable telescoping poles on the market. Very little flex and robust locking mechanisms make them an obvious choice for the serious angler. An ideal match for any of our Top Gun outrigger bases. Sold in Pairs.

Pulley Option Available

CARBON FIBER TOP GUN TELESCOPING POLES

For extra strength, stiffness, and reduced weight, Rupp's three-piece carbon fiber outrigger poles are the answer. Select from either 15, 18, or 22 feet. Sold in Pairs.



LENGTH	MATERIAL	MODEL #
15'	ALUMINUM	AO-1500-TEL
15'	CARBON FIBER	AO-1500-CFT
18'	ALUMINUM	AO-1800-TEL
18'	CARBON FIBER	AO-1800-CFT
22'	CARBON FIBER	AO-2200-CFT

Patent # 8,347,546

"Outriggers with Pulley Option"

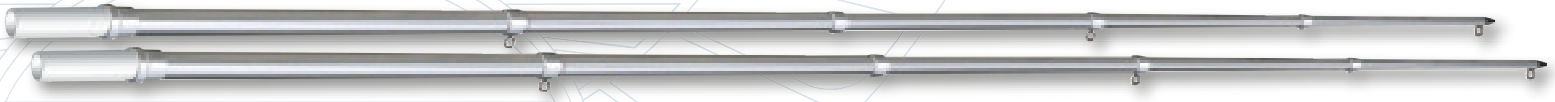
TOP GUN FIXED LENGTH POLES

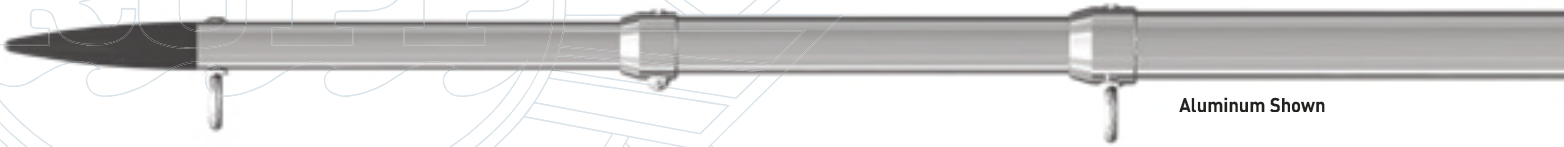
1.50 INCH POLES

Rupp's Classic Top Gun Poles are made from lightweight, cold drawn aluminum, at the most competitive prices. Aluminum or Carbon Fiber available in five piece fixed lengths of 15 or 18 feet. All Rupp Top Gun poles include bright anodized aluminum collars and PVC isolator for easy removal! Sold in Pairs.

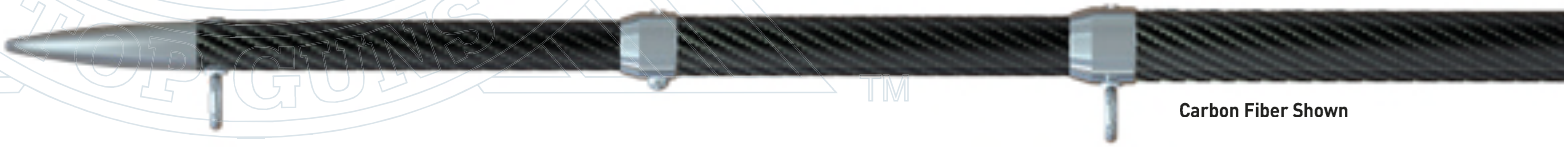
LENGTH	MATERIAL	MODEL #
15'	ALUMINUM	AO-1500-SIX
15'	CARBON FIBER	AO-1500-CF
18'	ALUMINUM	AO-1800-SIX
18'	CARBON FIBER	AO-1800-CF

Pulley Option Available



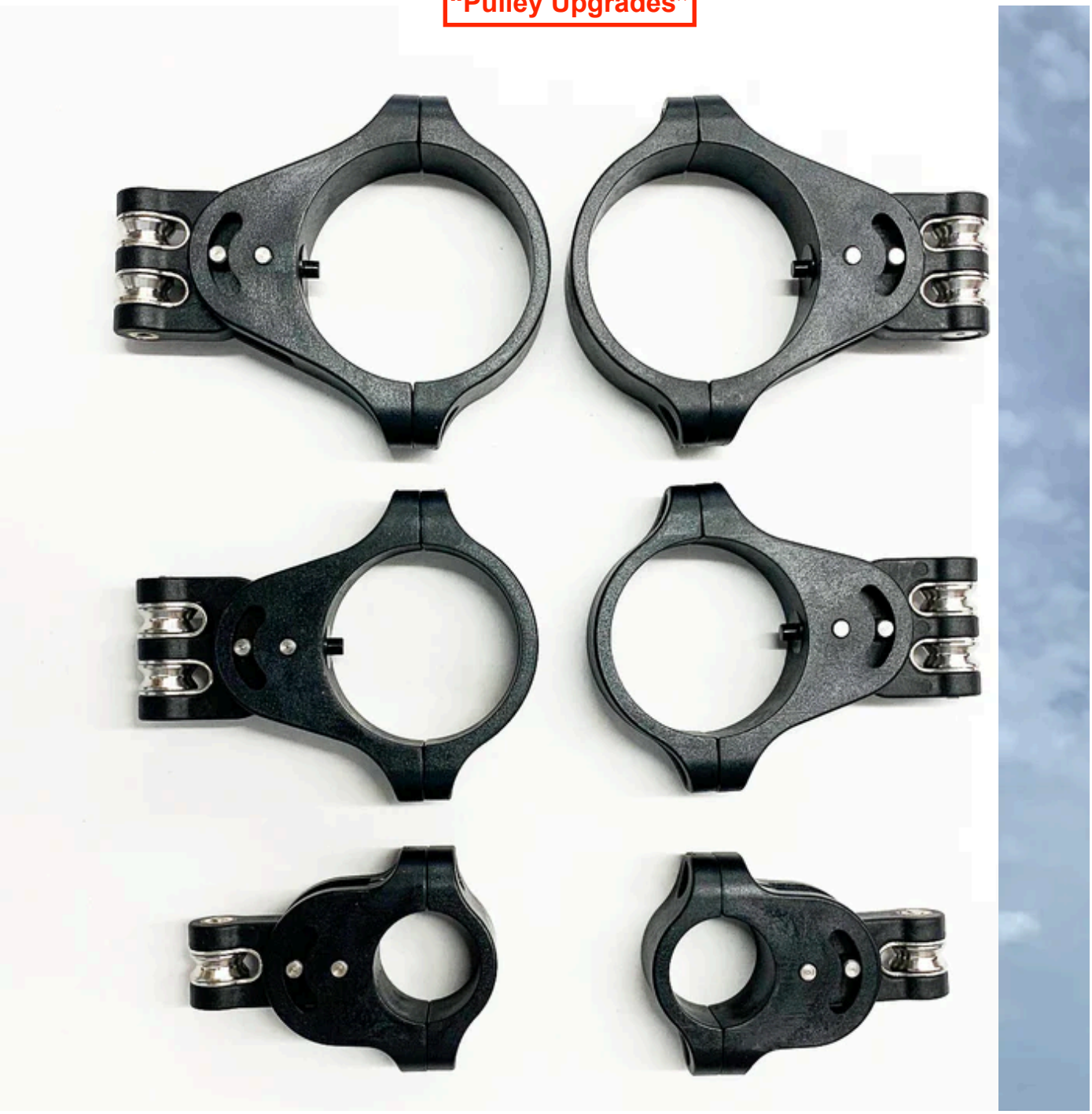


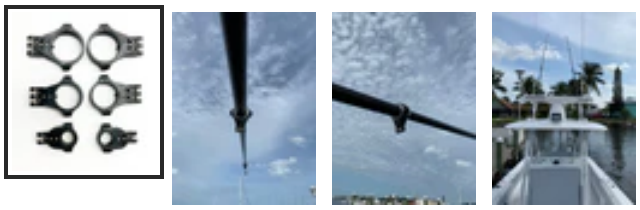
Aluminum Shown



Carbon Fiber Shown

“Pulley Upgrades”





CA-03PC-2X UPGRADE ONLY-CAN ONLY BE PURCHASED WITH 15/18' TEL POLES

$210.00

4 interest-free installments, or from **$18.95**/mo with shop Pay Check your purchasing power

SKU: CA-03PC-2X

Quantity:

1

ADD TO CART

Buy with shop Pay

More payment options

Secure Checkout With

Pickup available at Rupp Marine Inc.

Usually ready in 2-4 days

View store information

CA-03PC-2X

Double Rigging Pulley Upgrade Set for Telescoping Top Gun Poles, either 15' or 18'

When purchasing separately, please specify whether you have 15' or 18' and if you have aluminum or carbon fiber poles. These are not for fixed length poles.

CA-03PC-2XA for Aluminum Telescoping Poles

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Rupp Marine Inc.

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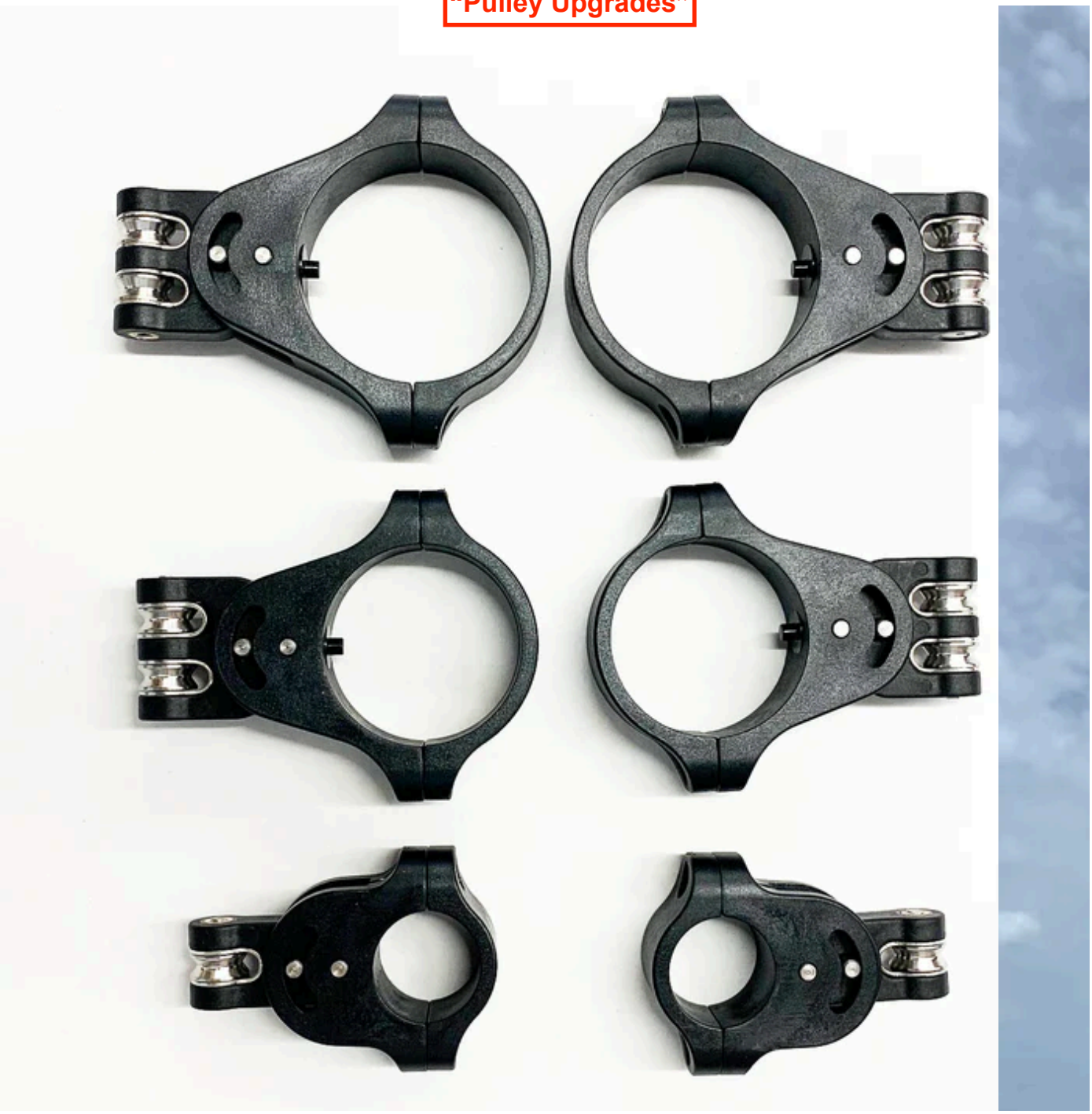
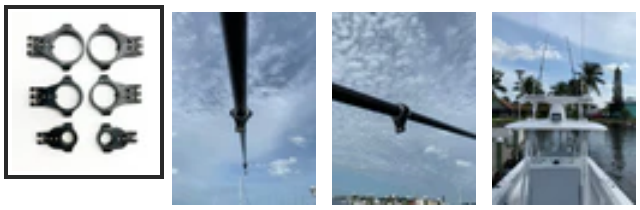
ABOUT OUR COMPANY

Since 1980, Rupp Marine has been the global leader in premium outriggers and marine hardware, known for quality American manufacturing and exceptional customer service. Our patented innovations and advanced technology ensure top performance for boats of all sizes. With a worldwide dealer network, we offer peace of mind, easy support, and access to spare parts.

“Pulley Upgrades”





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4 interest-free installments, or from **$18.95**/mo with shop Pay Check your purchasing power

SKU: CA-03PC-2X

Quantity:

1

ADD TO CART

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When purchasing separately, please specify whether you have 15' or 18' and if you have aluminum or carbon fiber poles. These are not for fixed length poles.

CA-03PC-2XA for Aluminum Telescoping Poles

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Since 1980, Rupp Marine has been the global leader in premium outriggers and marine hardware, known for quality American manufacturing and exceptional customer service. Our patented innovations and advanced technology ensure top performance for boats of all sizes. With a worldwide dealer network, we offer peace of mind, easy support, and access to spare parts.

EXHIBIT F

RUPP MARINE'S OUTRIGGER WITH PULLEY CLUSTERS AND PULLEY CLUSTERS

Claim 1 of '632 Patent	Rupp Marine's Outrigger with Pulley Clusters*	Rupp Marine's Pulley Clusters*
1. A line management system for a surface vessel, comprising:	Rupp's Outrigger with Pulley Clusters (1) are line management systems for boats	Rupp's Pulley Clusters (1) are specifically intended, designed and marketed to be line management systems for boats
an outrigger structure;	outrigger (2) is an outrigger structure	Pulley Clusters are specifically intended, designed and marketed to be used with an outrigger (2)
a plurality of outrigger cords;	It is well known that outrigger is intended to be used with multiple outrigger cords (3) (*See Rupp's Rigging Instructions*).	Pulley Clusters are specifically intended, designed and marketed to be used with multiple outrigger cords (3) (*See Rupp's Rigging Instructions*).
a plurality of cord management units coupled to the outrigger structure, said cord management units being longitudinally spaced one from the other along the outrigger structure, each of said cord management units including a housing secured by at least one fastener against displacement relative to the outrigger structure, each of said cord management units defining and maintaining a plurality of cord passages transversely offset one from the other, said cord passages respectively guiding predetermined ones of said outrigger cords to extend substantially in parallel to the outrigger structure, said outrigger cords thereby extending through respective ones of said cord passages of at least two of said plurality of cord management units and remaining independently displaceable	outrigger (2) includes Pully Clusters that are coupled to and spaced longitudinally along the outrigger (2); each Pully Cluster (1a and 1b) includes a housing (8) that is secured by a fastener 10 (a sex bolt) to prevent displacement of the housing (8) relative to the outrigger (2); the Pulley Clusters (1a and 1b) each defines and maintains cord passages transversely offset from each other (4), which are intended to respectively guide outrigger cords (3) so the outrigger cords (3) extend substantially parallel to the outrigger (2), it is intended that the outrigger cords (3) extend through respective cord passages of at least two Pully Clusters (1a and 1b) and that the outrigger cords (3) are independently movable longitudinally relative to the outrigger (2), as this is how outriggers necessarily operate (*See Rupp's Rigging Instructions*).	Pully Clusters are specifically intended, designed and marketed to be coupled to and spaced longitudinally along an outrigger (2); each Pully Cluster (1a and 1b) includes a housing (8) that is intended to be secured to an outrigger by a fastener 10 (a sex bolt) to prevent displacement of the housing (8) relative to the outrigger (2); the Pulley Clusters (1a and 1b) each defines and maintains cord passages transversely offset from each other (4), which are specifically intended, designed and marketed to respectively guide outrigger cords (3) so the outrigger cords (3) extend substantially parallel to an outrigger (2), Rupp's Pulley Clusters are specifically intended, designed and marketed for the outrigger cords (3) to extend through respective cord passages of at least two

**See e.g.,* pg. 9 of Rupp 2024-2025 Catalog (Exh. E)

RUPP MARINE'S OUTRIGGER WITH PULLEY CLUSTERS AND PULLEY CLUSTERS

Claim 1 of '632 Patent	Rupp Marine's Outrigger with Pulley Clusters*	Rupp Marine's Pulley Clusters*
longitudinally relative to the outrigger structure; and		Pully Clusters (1a and 1b) and the outrigger cords (3) are thus independently movable relative to the outrigger (2) (*See Rupp's Rigging Instructions*).
a plurality of retention devices, each of said retention devices coupled to one of said outrigger cords, each of said retention devices defining a retention point for advancing a line longitudinally along the outrigger structure responsive to displacement of said one of said outrigger cords.	the outrigger cords (3) necessarily respectively have outrigger clips (5) that have a point for advancing a fishing line longitudinally along the outrigger (2) in response to movement of the corresponding outrigger cord (3), as it is well known that this is how outriggers operate (*See Rupp's Rigging Instructions*).	Pulley Clusters (1) are specifically intended, designed and marketed to be used with outrigger cords (3) that respectively have outrigger clips (5) that have a point (5a) for advancing a fishing line longitudinally along the outrigger (2) in response to movement of the corresponding outrigger cord (3), as it is well known that this is how outriggers operate (*See Rupp's Rigging Instructions*).

**See e.g.,* pg. 9 of Rupp 2024-2025 Catalog (Exh. E)

RUPP MARINE'S OUTRIGGER WITH PULLEY CLUSTERS AND PULLEY CLUSTERS

Claim 1 of '778 Patent	Rupp Marine's Outrigger with Pulley Clusters*	Rupp Marine's Pulley Clusters*
1. A method of managing outrigger cords for a surface vessel having an outrigger structure, comprising:	Rupp's Outrigger with Pulley Clusters (2) includes a method for managing outrigger cords (3) on a fishing boat having an outrigger (2)	Rupp's Pulley Clusters (1) are specifically intended, designed and marketed to be used as a method for managing outrigger cords (3) on a fishing boat having an outrigger (2)
establishing a plurality of outrigger cords;	It is well known that outrigger is intended to be used with multiple outrigger cords (3) (*See Rupp's Rigging Instructions*).	Pulley Clusters (1) are specifically intended, designed and marketed to be used with multiple outrigger cords (3) (*See Rupp's Rigging Instructions*).
establishing a plurality of cord management positions longitudinally spaced one from the other along at least a portion of the outrigger structure;	Pulley Clusters (1) respectively establish cord management positions longitudinally spaced from each other along the outrigger (2)	Pulley Clusters (1) are specifically intended, designed and marketed to respectively establish cord management positions longitudinally spaced from each other when installed on an outrigger (2)
defining at each of said cord management positions within the portion of the outrigger structure a plurality of cord passages transversely offset one from the other, said cord passages respectively guiding predetermined ones of said outrigger cords to maintain independent longitudinal displacement thereof relative to the outrigger structure, and retaining said cord management positions such that the cord passages extend at fixed angular orientations relative to the outrigger structure;	each Pulley Cluster (1a and 1b) defines cord passages that are transversely offset from each other (4), which respectively guide the outrigger cords (3) so that the outrigger cords (3) are independently longitudinally movable relative to the outrigger (2); the Pulley Clusters (1) extend at fixed angular orientations (angle A) relative to the outrigger (2)	Pulley Clusters (1a and 1b) each defines cord passages that are transversely offset from each other (4), which are intended, designed and marketed to respectively guide outrigger cords (3) so the outrigger cords (3) are independently longitudinally movable relative to the outrigger (2); the Pulley Clusters (1) extend at fixed angular orientations (angle A) relative to an outrigger (2), when coupled to the outrigger (2)

**See e.g.,* pg. 9 of Rupp 2024-2025 Catalog (Exh. E)

RUPP MARINE'S OUTRIGGER WITH PULLEY CLUSTERS AND PULLEY CLUSTERS

Claim 1 of '778 Patent	Rupp Marine's Outrigger with Pulley Clusters*	Rupp Marine's Pulley Clusters*
arranging said cord management positions along the portion of the outrigger structure with consecutive cord management positions within the portion of the outrigger structure respectively guiding a progressively decreasing number of outrigger cords; and,	The Pulley Clusters (1a and 1b) are necessarily arranged on the outrigger (2) so that they progressively decrease in the number of outrigger cords (3)	Pulley Clusters (1a and 1b) are specifically intended, designed and marketed to be arranged on the outrigger (2) so that they progressively decrease in the number of outrigger cords (3)
establishing a plurality of retention devices, each of said retention devices coupled to one of said outrigger cords to define a retention point for advancing a line longitudinally along the outrigger structure responsive to displacement of said one of said outrigger cords.	outrigger cords (3) necessarily respectively have outrigger clips (5) that have respective retention points for respectively advancing fishing lines longitudinally along the outrigger (2) in response to movement of the corresponding outrigger cord (3), as it is well known that this is how outriggers operate (*See Rupp's Rigging Instructions*).	Pulley Clusters are specifically intended, designed and marketed to be used with outrigger cords (3) that respectively have outrigger clips (5) that respectively have retention points for respectively advancing fishing lines longitudinally along an outrigger (2) in response to movement of the corresponding outrigger cord (3), as it is well known that this is how outriggers operate (*See Rupp's Rigging Instructions*).

**See e.g.,* pg. 9 of Rupp 2024-2025 Catalog (Exh. E)

RUPP MARINE'S OUTRIGGER WITH PULLEY CLUSTERS AND PULLEY CLUSTERS

Claim 1 of '226 Patent	Rupp Marine's Outrigger with Pulley Clusters*	Rupp Marine's Pulley Clusters*
1. An outrigger cord management system for a surface vessel having an outrigger structure, comprising:	Rupp's Outriggers with Pulley Clusters are specifically intended, designed and marketed to be a cord management system for a fishing boat having an outrigger	Rupp's Pulley Clusters are specifically intended, designed and marketed to be an outrigger cord management system for a fishing boat having an outrigger
a plurality of outrigger cords;	It is well known that outrigger is intended to be used with multiple outrigger cords (3) (*See Rupp's Rigging Instructions*).	Pulley Clusters are specifically intended, designed and marketed to be used with multiple outrigger cords (3) (*See Rupp's Rigging Instructions*).
a plurality of cord management units disposed at respective cord management positions longitudinally spaced one from the other along at least a portion of the outrigger structure, each of said cord management units defining at least one cord passage;	outrigger (2) includes multiple of Pulley Clusters that are spaced longitudinally along the outrigger (2); each Pully Cluster defines at least one outrigger cord passage (4)	Pulley Clusters (1) are specifically intended, designed and marketed to be used as a set and installed in a longitudinally spaced relation on an outrigger (2), each Pulley Cluster defines at least one outrigger cord passage (4)
at least one of said cord management units within the outrigger structure portion defining a plurality of cord passages transversely offset one from the other, wherein said cord passages respectively guide predetermined ones of said outrigger cords to maintain independent longitudinal displacement thereof relative to the outrigger structure, said at least one cord management unit retaining the cord passages thereof to extend at fixed angular	At least one of the Pulley Clusters on the outrigger has multiple cord passages (4) transversely offset from one another, the cord passages respectively guide the outrigger cords (3) so that the outrigger cords (3) are independently movable relative to the outrigger (2), Pulley Clusters cause the cord passages to extend at a fixed angular orientation relative to the outrigger (Angle A) (*See Rupp's Rigging Instructions*).	Each Pulley Cluster has multiple cord passages (4) that are transversely offset from one another, the cord passages (4) are specifically intended, designed and marketed to respectively guide outrigger cords (3) so that the outrigger cords (3) are independently movable relative to an outrigger (2), Pulley Clusters cause the cord passages to extend at a fixed angular orientation relative to an outrigger

**See e.g.,* pg. 9 of Rupp 2024-2025 Catalog (Exh. E)

RUPP MARINE'S OUTRIGGER WITH PULLEY CLUSTERS AND PULLEY CLUSTERS

Claim 1 of '226 Patent	Rupp Marine's Outrigger with Pulley Clusters*	Rupp Marine's Pulley Clusters*
orientations relative to the outrigger structure;		(Angle A), when installed on an outrigger (2)
said cord management units disposed along the outrigger structure portion cooperatively defining consecutive cord management positions respectively guiding a progressively decreasing number of outrigger cords; and,	Pulley Clusters necessarily progressively guide decreasing number of outrigger cords based on their respective positions on the outrigger (2) (*See Rupp's Rigging Instructions*).	Pulley Clusters are specifically intended, designed and marketed to guide progressively decreasing number of outrigger cords based on their respective positions, when installed on an outrigger (2) (*See Rupp's Rigging Instructions*).
a plurality of retention devices each coupled to one of said outrigger cords to define a retention point for advancing a line longitudinally along the outrigger structure responsive to displacement of said one of said outrigger cords.	outrigger cords (2) necessarily respectively include outrigger clips (5) that respectively define retention points for respectively advancing fishing lines longitudinally along the outrigger (2) in response to displacement of the corresponding outrigger cord, as it is well known that this is how outriggers operate (*See Rupp's Rigging Instructions*).	Pulley Clusters are specifically intended, designed and marketed to be used with outrigger cords (2) that respectively include outrigger clips (5) that respectively define retention points for respectively advancing fishing lines longitudinally along an outrigger (2) in response to displacement of the corresponding outrigger cord, when Pulley Clusters are installed on an outrigger, as it is well known that this is how outriggers operate (*See Rupp's Rigging Instructions*).

**See e.g.,* pg. 9 of Rupp 2024-2025 Catalog (Exh. E)

RUPP MARINE'S OUTRIGGER WITH PULLEY CLUSTERS AND PULLEY CLUSTERS

Claim 1 of '566 Patent	Rupp Marine's Outrigger with Pulley Clusters*	Rupp Marine's Pulley Clusters*
1. An outrigger cord management apparatus for guiding a plurality of outrigger cords along a longitudinally extended outrigger structure of a surface vessel, the outrigger cords each having coupled thereto at least one retention device, each of said at least one retention device defining a retention point for a line advanced along the outrigger structure responsive to displacement of each of the outrigger cords thereof, the outrigger cord management apparatus comprising:	Rupp's Outriggers with Pulley Clusters (1), which necessarily guide outrigger cords (3) longitudinally along an outrigger (2) on a fishing boat, the outrigger cords necessarily (3) respectively have outrigger clips (5) that respectively define retention points for respectively moving fishing lines along the outrigger (2) in response to movement of the corresponding outrigger cord (*See Rupp's Rigging Instructions*).	Rupp's Pulley Clusters (1) are specifically intended, designed and marketed to guide outrigger cords (3) longitudinally along an outrigger (2) on a fishing boat, Rupp's Pulley Custers are specifically intended, designed and marketed to be used with outrigger cords (3) respectively having outrigger clips (5) that respectively define retention points for respectively moving fishing lines along the outrigger (2) in response to movement of the corresponding outrigger cord (*See Rupp's Rigging Instructions*).
at least one outrigger structure extending beyond a surface vessel,	The outrigger (2) extends beyond a fishing boat, as this is how outriggers necessarily operate (*See Rupp's Rigging Instructions*).	Pulley Clusters (1) are specifically intended, designed and marketed to be used with an outrigger that extends beyond a fishing boat (*See Rupp's Rigging Instructions*).
a plurality of outrigger cords,	It is well known that outrigger is intended to be used with multiple outrigger cords (3) (*See Rupp's Rigging Instructions*).	Pulley Clusters (1) are specifically intended, designed and marketed to be used with multiple outrigger cords (3) (*See Rupp's Rigging Instructions*).
a plurality of cord management units coupled to said at least one outrigger structure in a spaced apart relationship with one another,	Pulley Clusters (1) are coupled to outrigger (2) in a spaced relation	Pulley Clusters (1) are specifically intended, designed and marketed to be coupled to an outrigger in spaced relation

**See e.g.,* pg. 9 of Rupp 2024-2025 Catalog (Exh. E)

RUPP MARINE'S OUTRIGGER WITH PULLEY CLUSTERS AND PULLEY CLUSTERS

Claim 1 of '566 Patent	Rupp Marine's Outrigger with Pulley Clusters*	Rupp Marine's Pulley Clusters*
a pivot unit attached to said surface vessel in a spaced relationship with said at least one outrigger structure, each of said outrigger cords being operatively coupled between said pivot unit and at least one respective cord management unit of said plurality of cord management units and forming a cord endless loop configuration, and	A pulley assembly (6) (such as Rupp's Double Pulley) is necessarily attached to the fishing boat via a strap eye (7) and is spaced from the outrigger (2), each of the outrigger cords (3) is operatively coupled between the pulley assembly (6) and at least one Pulley Cluster (1) to form an endless loop of the outrigger cord. (*See Rupp's Rigging Instructions*).	Pulley Clusters (1) are specifically intended, designed and marketed to be used with a pulley assembly (6) (e.g., Rupp's Double Pulley) that is attached to a fishing boat via a strap eye (7), which is also spaced from the outrigger (2), so that each of the outrigger cords (3) is operatively coupled between the pulley assembly (6) and Pulley Cluster (1) to form an endless loop of the outrigger cord (*See Rupp's Rigging Instructions*).
a plurality of lines, wherein each of said plurality of lines is removably attached, at one end thereof, to the retention point of a respective said at least one retention device coupled to a respective outrigger cord of said plurality of outrigger cords, wherein a position of said each of said plurality of lines is controlled by displacing the retention point of the respective said at least one retention device longitudinally along said at least one outrigger structure responsive to a controlled displacement of said respective outrigger cord, and wherein said at least one respective cord management unit includes:	Multiple fishing lines necessarily are respectively attached to release clips (5) (the release clips are designed to release the fishing lines); respective positions of the fishing lines are controlled by independently moving the release clips (5) longitudinally along the outrigger (2) by moving the corresponding outrigger cord (3) (*See Rupp's Rigging Instructions*).	Pulley Clusters (1) are specifically intended, designed and marketed to be used in combination with multiple fishing lines that are respectively attached to release clips (5) (the release clips are designed to release the fishing lines); Rupp's Pulley Clusters are designed and marketed to allow respective positions of the fishing lines to be controlled by moving the respective release clips (5) longitudinally along the outrigger (2) in response to moving the corresponding outrigger cord (3) (*See Rupp's Rigging Instructions*).
a housing portion;	Pulley Clusters (1) include a housing (8)	Pulley Clusters (1) include a housing (8)

**See e.g.,* pg. 9 of Rupp 2024-2025 Catalog (Exh. E)

RUPP MARINE'S OUTRIGGER WITH PULLEY CLUSTERS AND PULLEY CLUSTERS

Claim 1 of '566 Patent	Rupp Marine's Outrigger with Pulley Clusters*	Rupp Marine's Pulley Clusters*
a releasable fastening portion coupled to said housing portion, said releasable fastening portion being configured to fixedly mount said housing portion intermediately along said at least one outrigger structure extending beyond a surface vessel to thereby extend said housing portion laterally from said at least one outrigger structure; and	housing (8) includes a sex bolt or other fastening device that can be removed to release the housing from the outrigger, which also fixedly mounts the housing (8) on the outrigger (2) so that the housing portion extends laterally from the outrigger (see Angle A)	housing (8) is specifically intended, designed and marketed to be used with a sex bolt or other fastening device that fixedly mounts the housing (8) on an outrigger (2) so that the housing portion extends laterally from the outrigger when installed (see Angle A)
a rotatable portion rotatably coupled to said housing portion, said rotatable portion defining a plurality of cord passages transversely offset one from the other and configured for respectively independently guiding said each of said plurality of outrigger cords longitudinally along said at least one outrigger structure when said housing portion is mounted thereto;	housing (8) includes rollers (9) that define cord passages (4) transversely offset from one another, and rollers (9) are configured to respectively independently guide the outrigger cords (3) longitudinally along the outrigger when the housing (8) is mounted to the outrigger (2)	Pulley Clusters housing (8) includes rotatable rollers (9) that define cord passages (4) transversely offset from one another, and the rollers (9) are specifically intended, designed and marketed to respectively independently guide outrigger cords (3) longitudinally along an outrigger when the housing (8) is mounted to the outrigger (2)
wherein said housing and rotatable portions are configured to maintain the cord passages about a common axis fixed in angle relative to said at least one outrigger structure when said housing portion is mounted thereto by said releasable fastening portion, and	housing (8) and rollers (9) maintain the cord passages (3) about a common axis that is fixed in angle (Angle A) relative to the outrigger when the housing (8) is mounted to the outrigger (2) with the sex bolt of other fastener (10)	Pulley Cluster housing (8) and rotatable rollers (9) are specifically intended, designed and marketed to maintain the cord passages (3) about a common axis that is fixed in angle (Angle A) relative to an outrigger when the housing (8) is mounted to the outrigger (2) with the sex bolt or other fastener (10)

**See e.g.,* pg. 9 of Rupp 2024-2025 Catalog (Exh. E)

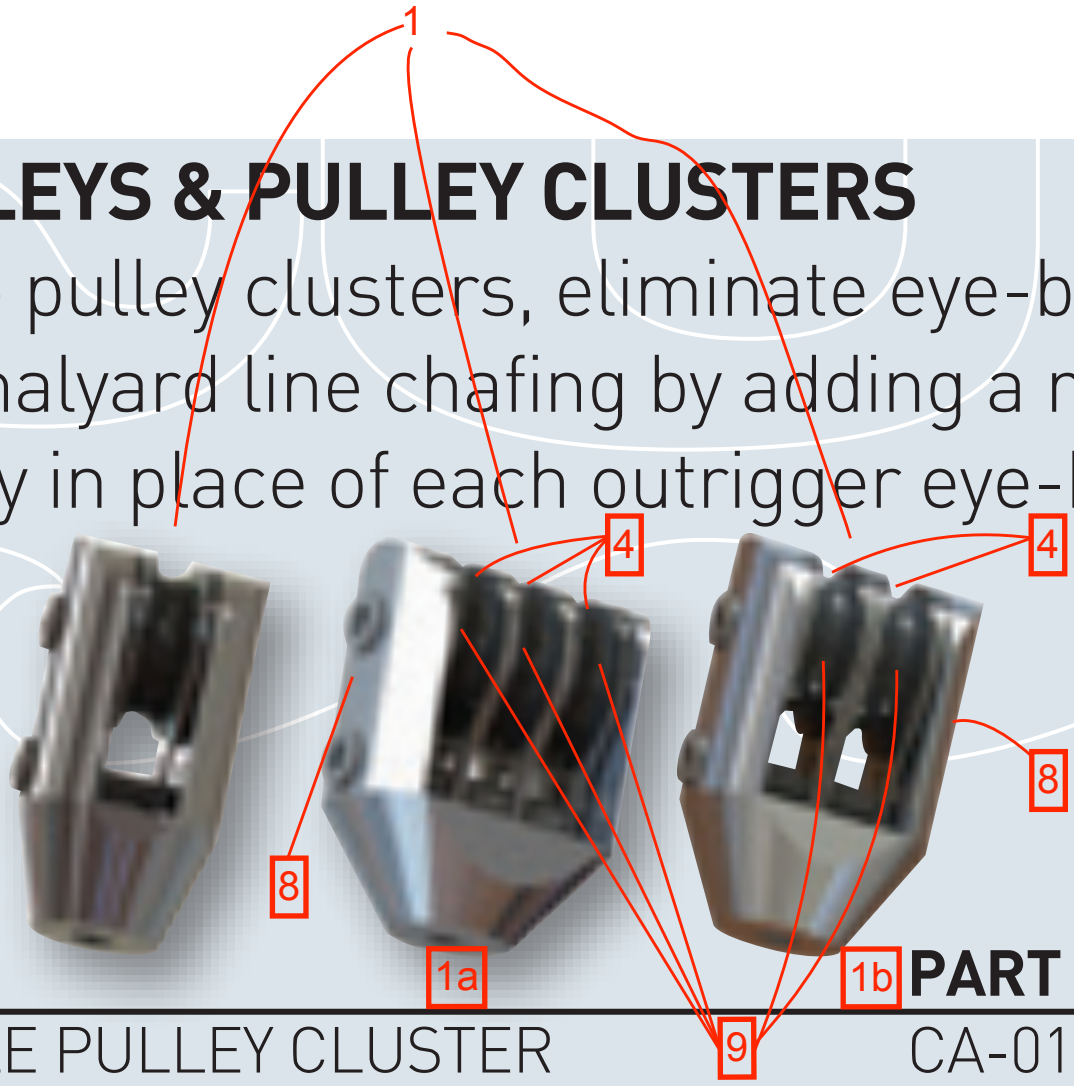
RUPP MARINE'S OUTRIGGER WITH PULLEY CLUSTERS AND PULLEY CLUSTERS

Claim 1 of '566 Patent	Rupp Marine's Outrigger with Pulley Clusters*	Rupp Marine's Pulley Clusters*
wherein said rotatable portion is configured to enable said plurality of outrigger cords to be independently and simultaneously controlled for displacement without undue interference of any one of said plurality of outrigger cords with other of said plurality of outrigger cords.	rotatable rollers (9) enable the outrigger cords (3) to be independently and simultaneously movable without undue interference of other outrigger cords (3) (*See Rupp's Rigging Instructions*).	rotatable rollers (9) in Rupp's Pulley Cluster are specifically intended, designed and marketed to enable outrigger cords (3) to be independently and simultaneously moved without undue interference of other outrigger cords (3) (*See Rupp's Rigging Instructions*).

**See e.g.,* pg. 9 of Rupp 2024-2025 Catalog (Exh. E)

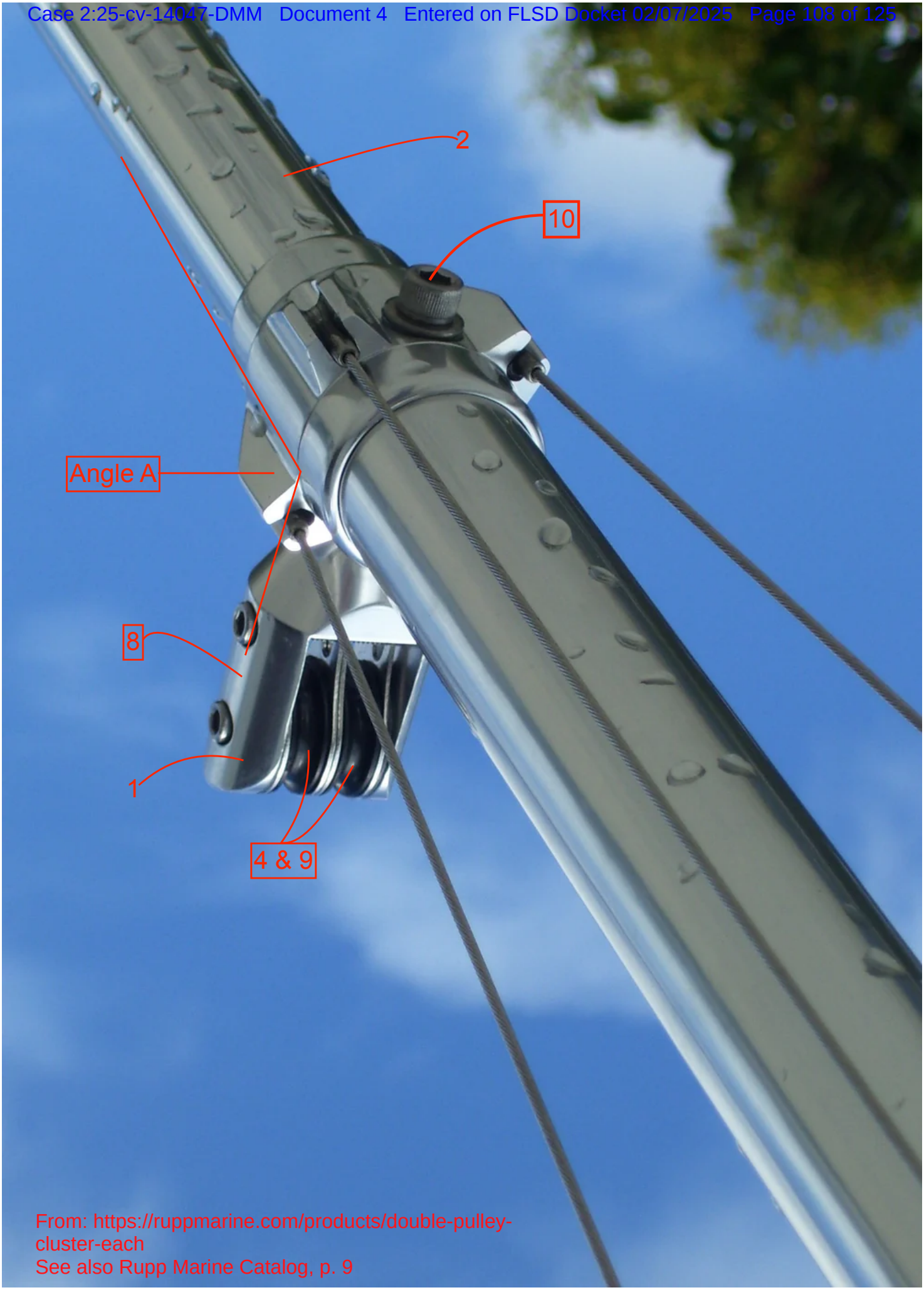
PULLEYS & PULLEY CLUSTERS

Rupp pulley clusters, eliminate eye-bolt and halyard line chafing by adding a roller pulley in place of each outrigger eye-bolt.



TYPE	PART #
SINGLE PULLEY CLUSTER	CA-0144
DOUBLE PULLEY CLUSTER	CA-0145
TRIPLE PULLEY CLUSTER	CA-0146

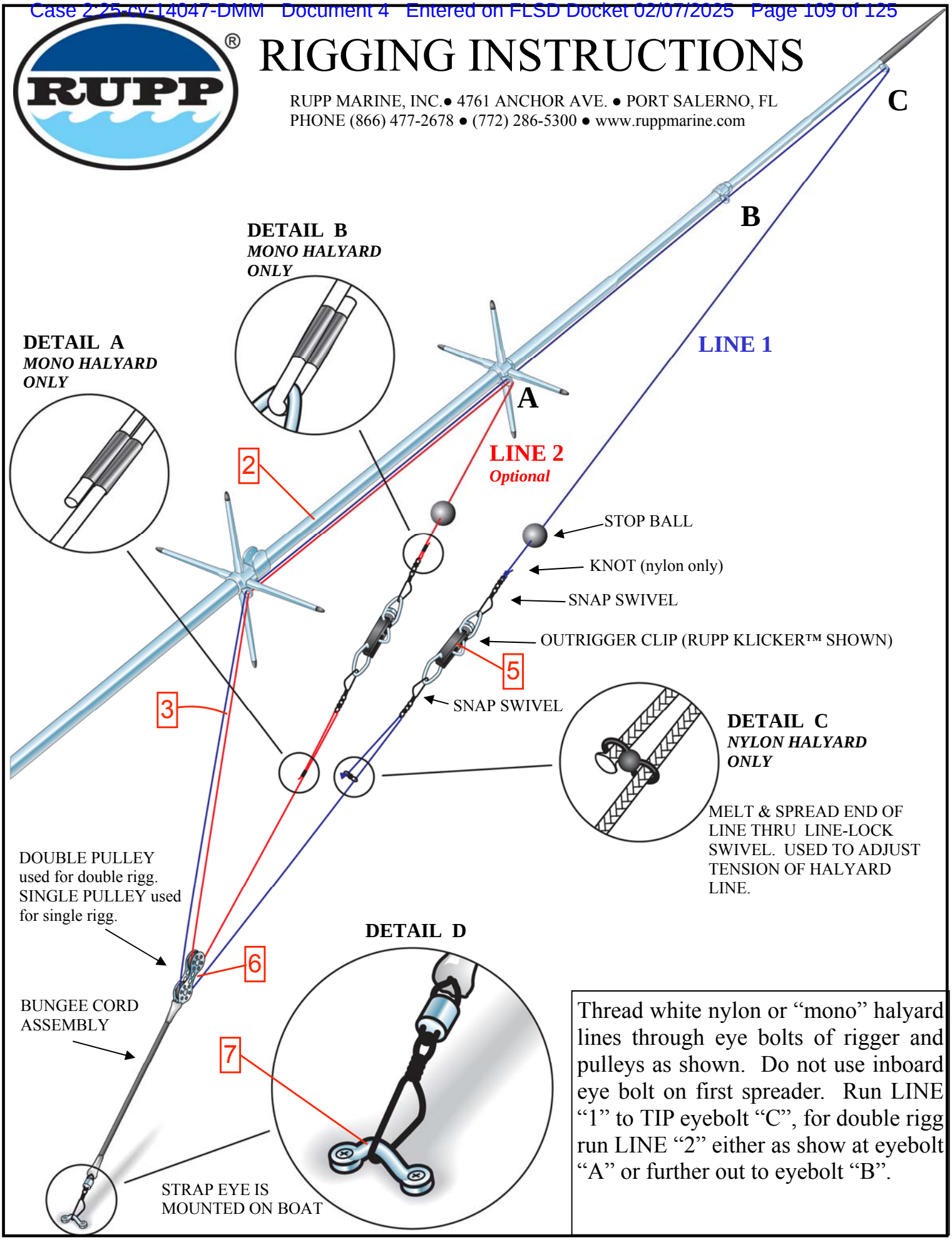
From: Rupp Marine Catalog, pg. 9



From: https://ruppmarine.com/products/double-pulley-cluster-each
See also Rupp Marine Catalog, p. 9

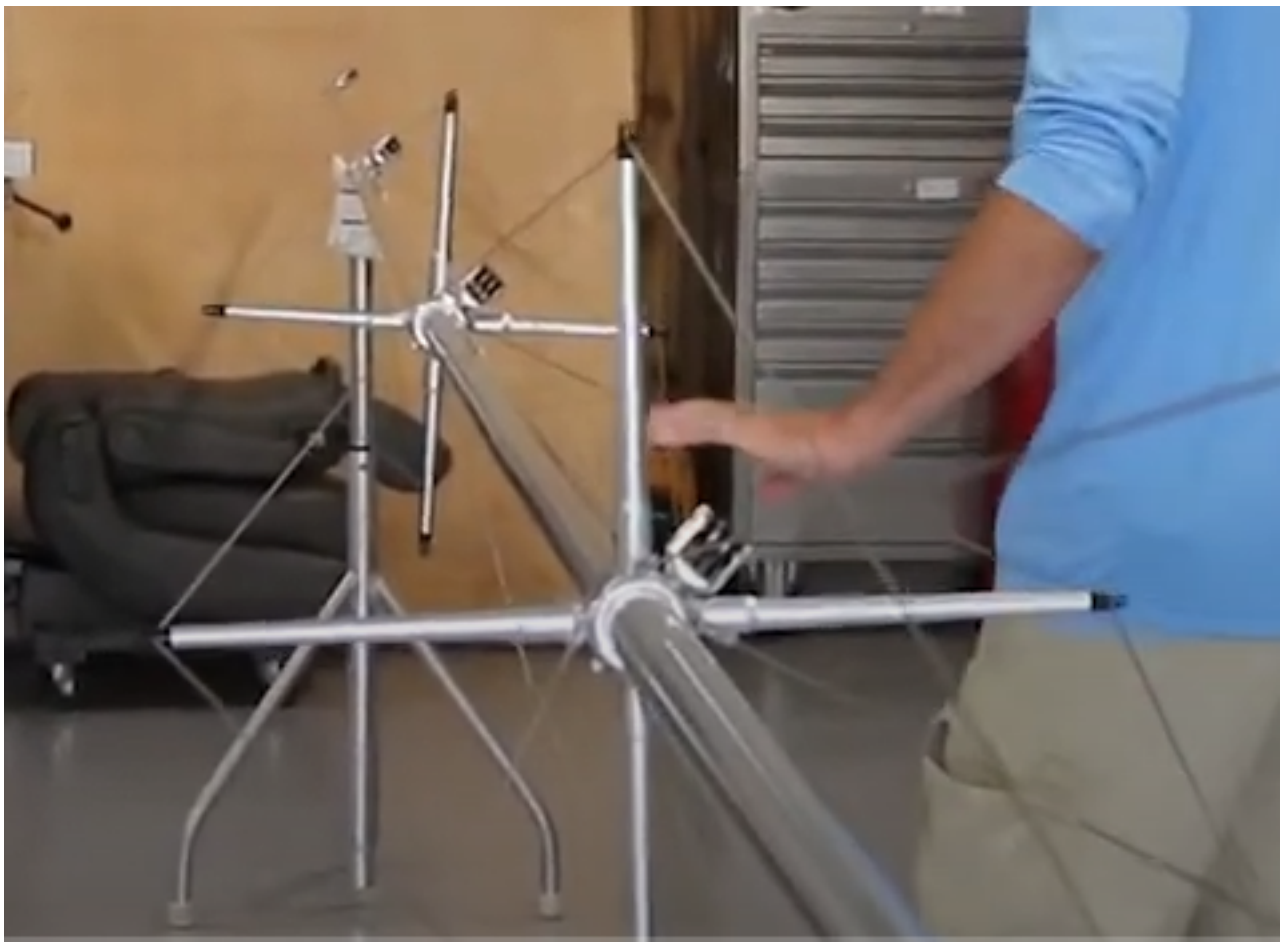
RIGGING INSTRUCTIONS

RUPP MARINE, INC.● 4761 ANCHOR AVE. ● PORT SALERNO, FL
PHONE (866) 477-2678 ● (772) 286-5300 ● www.ruppmarine.com



Thread white nylon or "mono" halyard lines through eye bolts of rigger and pulleys as shown. Do not use inboard eye bolt on first spreader. Run LINE "1" to TIP eyebolt "C", for double rigg run LINE "2" either as show at eyebolt "A" or further out to eyebolt "B".

Rupp Outrigger with Pulley Clusters



From: Rupp Outrigger Tuning video (https://www.youtube.com/watch?app=desktop&v=5MAt6uh3rm4)
See also Rupp Marine Catalog, p. 15

EXHIBIT G

RUPP MARINE'S OUTRIGGER WITH PULLEY OPTION AND PULLEY UPGRADE

Claim 1 of '632 Patent	Rupp's Outrigger with Pulley Option*	Rupp's Pulley Upgrade*
1. A line management system for a surface vessel, comprising:	Rupp's Outrigger with Pulley Option (1) are line management systems for boats	Rupp's Pulley Upgrades (1) are specifically designed, intended, and marketed to be a line management system for a boat
an outrigger structure;	outrigger (2) is an outrigger structure	Pulley Upgrades are specifically designed, intended, and marketed to be used with an outrigger (2)
a plurality of outrigger cords;	It is well known that outrigger is intended to be used with multiple outrigger cords (3) (*See Rupp's Rigging Instructions*).	Pulley Upgrades are specifically designed, intended, and marketed to be used with multiple outrigger cords (3) (*See Rupp's Rigging Instructions*).
a plurality of cord management units coupled to the outrigger structure, said cord management units being longitudinally spaced one from the other along the outrigger structure, each of said cord management units including a housing secured by at least one fastener against displacement relative to the outrigger structure, each of said cord management units defining and maintaining a plurality of cord passages transversely offset one from the other, said cord passages respectively guiding predetermined ones of said outrigger cords to extend substantially in parallel to the outrigger structure, said outrigger cords thereby extending through respective ones of said cord passages of at least two of said plurality of cord management units and remaining independently displaceable	outrigger (2) includes Pully Option that are coupled to and spaced longitudinally along the outrigger (2); each Pully Option (1a and 1b) includes a housing (8) that is secured by a fastener (e.g., outstanding nub (10) that engages a hole in the outrigger) (alternately clamps with fasteners (10a) frictionally couple to the outrigger (2)) to prevent displacement of the housing (8) relative to the outrigger (2); the Pulley Option (1a and 1b) each defines and maintains cord passages transversely offset from each other (4), which respectively guide the outrigger cords (3) so the outrigger cords (3) extend substantially parallel to the outrigger (2), the outrigger cords (3) thereby extend through respective cord passages of at least two Pully Clusters (1a and 1b); the outrigger cords (3) are independently movable longitudinally relative to the outrigger (2), as	Pully Upgrades are specifically designed, intended, and marketed to be coupled to and spaced longitudinally along an outrigger (2); each Pully Upgrade (1a and 1b) includes a housing (8) that is intended to be secured to an outrigger by a fastener (e.g., outstanding nub (10) that engages a hole in the outrigger) (alternately, clamps with fasteners (10a) frictionally coupled to the outrigger (2)) to prevent displacement of the housing (8) relative to the outrigger (2); the Pulley Upgrades (1a and 1b) each defines and maintains cord passages transversely offset from each other (4), which are specifically designed, intended, and marketed to respectively guide outrigger cords (3) so the outrigger cords (3) extend substantially parallel to an outrigger (2),

**See e.g.,* pg. 15 of Rupp 2024-2025 Catalog and Rupp Marine website pages (Exh. E)

RUPP MARINE'S OUTRIGGER WITH PULLEY OPTION AND PULLEY UPGRADE

Claim 1 of '632 Patent	Rupp's Outrigger with Pulley Option*	Rupp's Pulley Upgrade*
longitudinally relative to the outrigger structure; and	this is how outriggers operate (*See Rupp's Rigging Instructions*).	Rupp's Pulley Upgrades are specifically designed, intended, and marketed for the outrigger cords (3) to extend through respective cord passages of at least two Pully Upgrades (1a and 1b) and the outrigger cords (3) are thus independently movable relative to the outrigger (2) (*See Rupp's Rigging Instructions*).
a plurality of retention devices, each of said retention devices coupled to one of said outrigger cords, each of said retention devices defining a retention point for advancing a line longitudinally along the outrigger structure responsive to displacement of said one of said outrigger cords.	The outrigger cords (3) necessarily respectively have outrigger clips (5) that have a point for advancing a fishing line longitudinally along the outrigger (2) in response to movement of the corresponding outrigger cord (3), as it is well known that this is how outriggers operate (*See Rupp's Rigging Instructions*).	Pulley Upgrades (1) are specifically designed, intended, and marketed to be used with outrigger cords (3) that respectively have outrigger clips (5) that have a point (5a) for advancing a fishing line longitudinally along the outrigger (2) in response to movement of the corresponding outrigger cord (3), as it is well known that this is how outriggers operate (*See Rupp's Rigging Instructions*).

**See e.g.,* pg. 15 of Rupp 2024-2025 Catalog and Rupp Marine website pages (Exh. E)

RUPP MARINE'S OUTRIGGER WITH PULLEY OPTION AND PULLEY UPGRADE

Claim 1 of '778 Patent	Rupp Marine's Outrigger with Pulley Option*	Rupp Marine's Pulley Upgrade*
1. A method of managing outrigger cords for a surface vessel having an outrigger structure, comprising:	Rupp's Outrigger with Pulley Option includes a method for managing outrigger cords (3) on a fishing boat having an outrigger (2)	Rupp's Pulley Upgrades (1) are specifically designed, intended, and marketed to be used as a method for managing outrigger cords (3) on a fishing boat having an outrigger (2)
establishing a plurality of outrigger cords;	It is well known that outrigger is intended to be used with multiple outrigger cords (3) (*See Rupp's Rigging Instructions*).	Pulley Upgrades (1) are specifically designed, intended, and marketed to be used with multiple outrigger cords (3) (*See Rupp's Rigging Instructions*).
establishing a plurality of cord management positions longitudinally spaced one from the other along at least a portion of the outrigger structure;	Pulley Option (1) respectively establish cord management positions longitudinally spaced from each other along the outrigger (2)	Pulley Upgrades (1) are specifically designed, intended, and marketed to respectively establish cord management positions longitudinally spaced from each other when installed on an outrigger (2)
defining at each of said cord management positions within the portion of the outrigger structure a plurality of cord passages transversely offset one from the other, said cord passages respectively guiding predetermined ones of said outrigger cords to maintain independent longitudinal displacement thereof relative to the outrigger structure, and retaining said cord management positions such that the cord passages extend at fixed angular orientations relative to the outrigger structure;	each Pulley Option (1a and 1b) defines cord passages that are transversely offset from each other (4), which respectively guide the outrigger cords (3) so that the outrigger cords (3) are independently longitudinally movable relative to the outrigger (2); the Pulley Options (1) extend at fixed angular orientations (angle A) relative to the outrigger (2)	Pulley Upgrades (1a and 1b) each defines cord passages that are transversely offset from each other (4), which are designed and marketed to respectively guide outrigger cords (3) so the outrigger cords (3) are independently longitudinally movable relative to the outrigger (2); the Pulley Upgrades (1) extend at fixed angular orientations (angle A) relative to an outrigger (2), when coupled to the outrigger (2)

**See e.g.,* pg. 15 of Rupp 2024-2025 Catalog and Rupp Marine website pages (Exh. E)

RUPP MARINE'S OUTRIGGER WITH PULLEY OPTION AND PULLEY UPGRADE

Claim 1 of '778 Patent	Rupp Marine's Outrigger with Pulley Option*	Rupp Marine's Pulley Upgrade*
arranging said cord management positions along the portion of the outrigger structure with consecutive cord management positions within the portion of the outrigger structure respectively guiding a progressively decreasing number of outrigger cords; and	Pulley Options (1a and 1b) are arranged on the outrigger (2) so that they progressively decrease in the number of outrigger cords (3) (*See Rupp's Rigging Instructions*).	Pulley Upgrades (1a and 1b) are specifically designed, intended, and marketed to be arranged on the outrigger (2) so that they progressively decrease in the number of outrigger cords (3) (*See Rupp's Rigging Instructions*).
establishing a plurality of retention devices, each of said retention devices coupled to one of said outrigger cords to define a retention point for advancing a line longitudinally along the outrigger structure responsive to displacement of said one of said outrigger cords.	The outrigger cords (3) necessarily respectively have outrigger clips (5) that have respective retention points for respectively advancing fishing lines longitudinally along the outrigger (2) in response to movement of the corresponding outrigger cord (3), as it is well known that this is how outriggers operate (*See Rupp's Rigging Instructions*).	Rupp's Pulley Upgrades are specifically designed, intended, and marketed to be used with outrigger cords (3) that respectively have outrigger clips (5) that respectively have retention points for respectively advancing fishing lines longitudinally along an outrigger (2) in response to movement of the corresponding outrigger cord (3), as it is well known that this is how outriggers operate (*See Rupp's Rigging Instructions*).

**See e.g.,* pg. 15 of Rupp 2024-2025 Catalog and Rupp Marine website pages (Exh. E)

RUPP MARINE'S OUTRIGGER WITH PULLEY OPTION AND PULLEY UPGRADE

Claim 1 of '226 Patent	Rupp Marine's Outrigger with Pulley Option*	Rupp Marine's Pulley Upgrade*
1. An outrigger cord management system for a surface vessel having an outrigger structure, comprising:	Rupp's Outrigger with Pulley Option is a cord management system for a fishing boat	Rupp's Pulley Upgrades are specifically designed, intended, and marketed to be an outrigger cord management system for a fishing boat having an outrigger
a plurality of outrigger cords;	It is well known that outrigger is intended to be used with multiple outrigger cords (3) (*See Rupp's Rigging Instructions*).	Pulley Upgrades are specifically designed, intended, and marketed to be used with multiple outrigger cords (3) (*See Rupp's Rigging Instructions*).
a plurality of cord management units disposed at respective cord management positions longitudinally spaced one from the other along at least a portion of the outrigger structure, each of said cord management units defining at least one cord passage;	outrigger (2) includes multiple of Rupp's Pulley Options that are spaced longitudinally along the outrigger (2); each of Rupp's Pully Options defines at least one outrigger cord passage (4)	Pulley Upgrades (1) are specifically designed, intended, and marketed to be used as a set and installed in a longitudinally spaced relation on an outrigger (2), each of Rupp's Pulley Upgrades defines at least one outrigger cord passage (4)
at least one of said cord management units within the outrigger structure portion defining a plurality of cord passages transversely offset one from the other, wherein said cord passages respectively guide predetermined ones of said outrigger cords to maintain independent longitudinal displacement thereof relative to the outrigger structure, said at least one cord management unit retaining the cord passages thereof to extend at fixed angular	At least one of the Pulley Options on the outrigger has multiple cord passages (4) transversely offset from one another, the cord passages respectively guide the outrigger cords (3) so that the outrigger cords (3) are independently movable relative to the outrigger (2), Rupp's Pulley Options cause the cord passages to extend at a fixed angular orientation relative to the outrigger (Angle A)	Pulley Upgrades have multiple cord passages (4) that are transversely offset from one another, the cord passages (4) are specifically designed, intended, and marketed to respectively guide outrigger cords (3) so that the outrigger cords (3) are independently movable relative to an outrigger (2), Rupp's Pulley Upgrades cause the cord passages to extend at a fixed angular orientation relative to an

**See e.g.,* pg. 15 of Rupp 2024-2025 Catalog and Rupp Marine website pages (Exh. E)

RUPP MARINE'S OUTRIGGER WITH PULLEY OPTION AND PULLEY UPGRADE

Claim 1 of '226 Patent	Rupp Marine's Outrigger with Pulley Option*	Rupp Marine's Pulley Upgrade*
orientations relative to the outrigger structure;		outrigger (Angle A), when installed on an outrigger (2)
said cord management units disposed along the outrigger structure portion cooperatively defining consecutive cord management positions respectively guiding a progressively decreasing number of outrigger cords; and	Pulley Options guide progressively decreasing number of outrigger cords based on their respective positions on the outrigger (2) (*See Rupp's Rigging Instructions*).	Pulley Upgrades are specifically designed, intended, and marketed to guide progressively decreasing number of outrigger cords based on their respective positions, when installed on an outrigger (2) (*See Rupp's Rigging Instructions*).
a plurality of retention devices each coupled to one of said outrigger cords to define a retention point for advancing a line longitudinally along the outrigger structure responsive to displacement of said one of said outrigger cords.	The outrigger cords (2) necessarily respectively include outrigger clips (5) that respectively define retention points for respectively advancing fishing lines longitudinally along the outrigger (2) in response to displacement of the corresponding outrigger cord, as it is well known that this is how outriggers operate (*See Rupp's Rigging Instructions*).	Pulley Upgrades are specifically designed, intended, and marketed to be used with outrigger cords (2) that respectively include outrigger clips (5) that respectively define retention points for respectively advancing fishing lines longitudinally along an outrigger (2) in response to displacement of the corresponding outrigger cord, when Rupp's Pulley Upgrades are installed on an outrigger, as it is well known that this

**See e.g.,* pg. 15 of Rupp 2024-2025 Catalog and Rupp Marine website pages (Exh. E)

RUPP MARINE'S OUTRIGGER WITH PULLEY OPTION AND PULLEY UPGRADE

Claim 1 of '226 Patent	Rupp Marine's Outrigger with Pulley Option*	Rupp Marine's Pulley Upgrade*
		is how outriggers operate (*See Rupp's Rigging Instructions*).

**See e.g.,* pg. 15 of Rupp 2024-2025 Catalog and Rupp Marine website pages (Exh. E)

RUPP MARINE'S OUTRIGGER WITH PULLEY OPTION AND PULLEY UPGRADE

Claim 1 of '566 Patent	Rupp Marine's Outrigger with Pulley Option*	Rupp Marine's Pulley Upgrade*
1. An outrigger cord management apparatus for guiding a plurality of outrigger cords along a longitudinally extended outrigger structure of a surface vessel, the outrigger cords each having coupled thereto at least one retention device, each of said at least one retention device defining a retention point for a line advanced along the outrigger structure responsive to displacement of each of the outrigger cords thereof, the outrigger cord management apparatus comprising:	Rupp's Pulley Option (1), which guide outrigger cords (3) longitudinally along an outrigger (2) on a fishing boat, the outrigger cords (3) respectively have outrigger clips (5) that respectively define retention points for respectively moving fishing lines along the outrigger (2) in response to movement of the corresponding outrigger cord (*See Rupp's Rigging Instructions*).	Rupp's Pulley Upgrades (1) are specifically designed, intended, and marketed to guide outrigger cords (3) longitudinally along an outrigger (2) on a fishing boat, Rupp's Pulley Upgrades are specifically designed, intended, and marketed to be used with outrigger cords (3) respectively having outrigger clips (5) that respectively define retention points for respectively moving fishing lines along the outrigger (2) in response to movement of the corresponding outrigger cord (*See Rupp's Rigging Instructions*).
at least one outrigger structure extending beyond a surface vessel,	outrigger (2) is designed to extend beyond a fishing boat	Pulley Upgrades (1) are specifically designed, intended, and marketed to be used with an outrigger that extends beyond a fishing boat
a plurality of outrigger cords,	outrigger (2) includes multiple outrigger cords (3) (*See Rupp's Rigging Instructions*).	Pulley Upgrades (1) are specifically designed, intended, and marketed to be used with multiple outrigger cords (3) (*See Rupp's Rigging Instructions*).
a plurality of cord management units coupled to said at least one outrigger structure in a spaced apart relationship with one another,	Pulley Option (1) are coupled to outrigger (2) in a spaced relation	Pulley Upgrades (1) are specifically designed, intended, and marketed to be coupled to an outrigger in spaced relation

**See e.g.,* pg. 15 of Rupp 2024-2025 Catalog and Rupp Marine website pages (Exh. E)

RUPP MARINE'S OUTRIGGER WITH PULLEY OPTION AND PULLEY UPGRADE

Claim 1 of '566 Patent	Rupp Marine's Outrigger with Pulley Option*	Rupp Marine's Pulley Upgrade*
a pivot unit attached to said surface vessel in a spaced relationship with said at least one outrigger structure, each of said outrigger cords being operatively coupled between said pivot unit and at least one respective cord management unit of said plurality of cord management units and forming a cord endless loop configuration, and	A pulley assembly (6) (such as Rupp's Double Pulley) is attached to the fishing boat via a strap eye (7) and is spaced from the outrigger (2), each of the outrigger cords (3) is operatively coupled between the pulley assembly (6) and at least one Pulley Option (1) to form an endless loop of the outrigger cord. (*See Rupp's Rigging Instructions*).	Pulley Upgrades (1) are specifically designed, intended, and marketed to be used with a pulley assembly (6) (e.g., Rupp's Double Pulley) that is attached to a fishing boat via a strap eye (7), which is also spaced from the outrigger (2), so that each of the outrigger cords (3) is operatively coupled between the pulley assembly (6) and Rupp's Pulley Upgrades (1) to form an endless loop of the outrigger cord (*See Rupp's Rigging Instructions*).
a plurality of lines, wherein each of said plurality of lines is removably attached, at one end thereof, to the retention point of a respective said at least one retention device coupled to a respective outrigger cord of said plurality of outrigger cords, wherein a position of said each of said plurality of lines is controlled by displacing the retention point of the respective said at least one retention device longitudinally along said at least one outrigger structure responsive to a controlled displacement of said respective outrigger cord, and wherein said at least one respective cord management unit includes:	Multiple fishing lines are necessarily respectively attached to release clips (5) (the release clips are designed to release the fishing lines); respective positions of the fishing lines are controlled by independently moving the release clips (5) longitudinally along the outrigger (2) by moving the corresponding outrigger cord (3) (*See Rupp's Rigging Instructions*).	Pulley Upgrades (1) are specifically designed, intended, and marketed to be used in combination with multiple fishing lines that are respectively attached to release clips (5) (the release clips are designed to release the fishing lines); Rupp's Pulley Upgrades are designed and marketed to allow respective positions of the fishing lines to be controlled by moving the respective release clips (5) longitudinally along the outrigger (2) in response to moving the corresponding outrigger cord (3) (*See Rupp's Rigging Instructions*).
a housing portion;	Pulley Option (1) include a housing (8)	Pulley Upgrades (1) include a housing (8)

**See e.g.,* pg. 15 of Rupp 2024-2025 Catalog and Rupp Marine website pages (Exh. E)

RUPP MARINE'S OUTRIGGER WITH PULLEY OPTION AND PULLEY UPGRADE

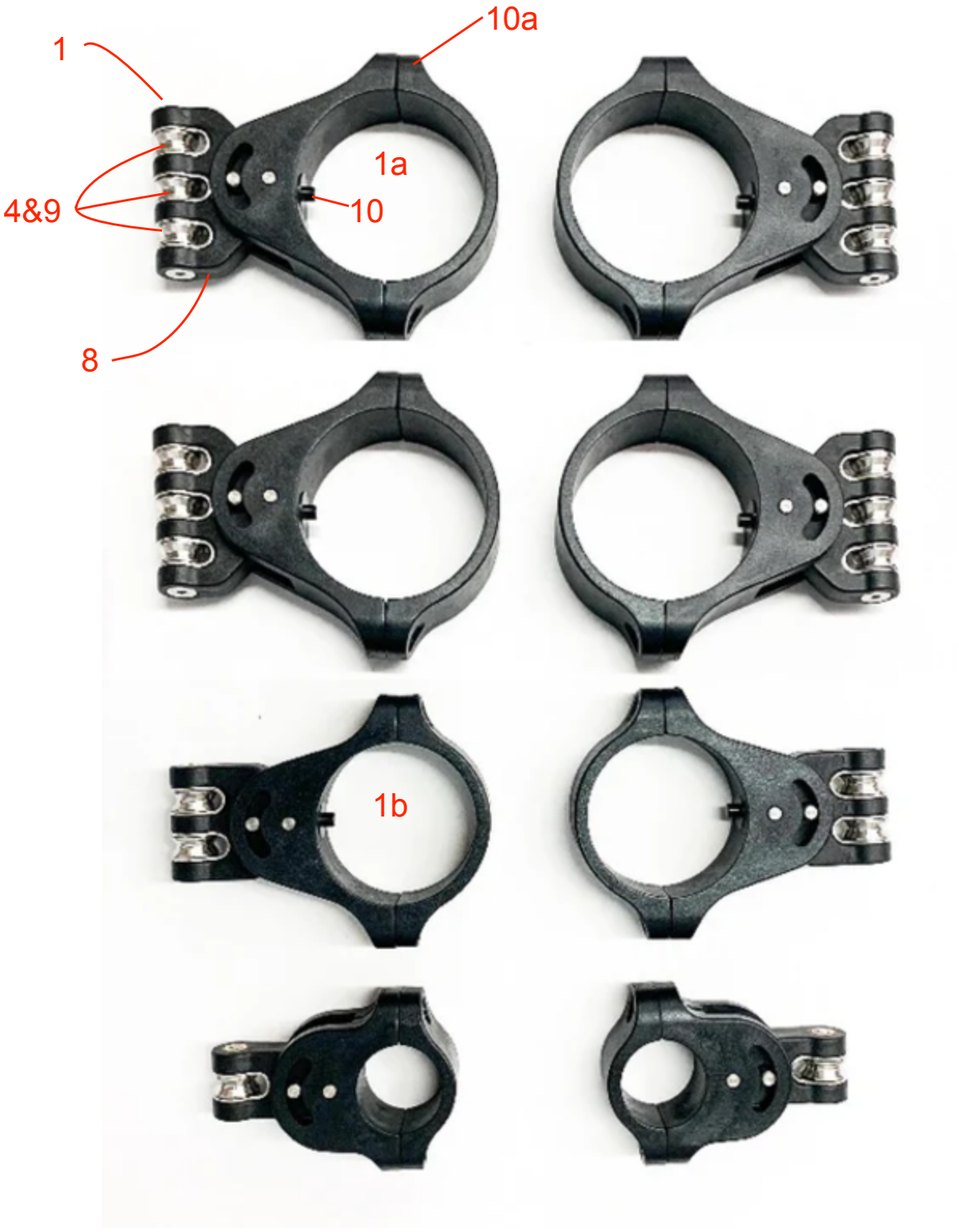
Claim 1 of '566 Patent	Rupp Marine's Outrigger with Pulley Option*	Rupp Marine's Pulley Upgrade*
a releasable fastening portion coupled to said housing portion, said releasable fastening portion being configured to fixedly mount said housing portion intermediately along said at least one outrigger structure extending beyond a surface vessel to thereby extend said housing portion laterally from said at least one outrigger structure; and	The housing (8) includes a nub (10) that engages a hole on the outrigger (2) to releasably connect the housing to the outrigger, which also fixedly mounts the housing (8) on the outrigger (2) so that the housing portion extends laterally from the outrigger (see Angle A); alternately clamps with fasteners (10a) frictionally couple to the outrigger (2) which also fixedly mounts the housing (8) on the outrigger (2) so that the housing portion extends laterally from the outrigger (see Angle A)	Housing (8) is specifically designed, intended, and marketed to be used with a nub (10) that engages a hole on the outrigger (2) or clamps with fasteners (10a) that fixedly mounts the housing (8) on outrigger (2) so that the housing portion extends laterally from the outrigger when installed (see Angle A)
a rotatable portion rotatably coupled to said housing portion, said rotatable portion defining a plurality of cord passages transversely offset one from the other and configured for respectively independently guiding said each of said plurality of outrigger cords longitudinally along said at least one outrigger structure when said housing portion is mounted thereto;	The housing (8) includes rollers (9) that define cord passages (4) transversely offset from one another, and rollers (9) are configured to respectively independently guide the outrigger cords (3) longitudinally along the outrigger when the housing (8) is mounted to the outrigger (2)	Pulley Upgrade housing (8) includes rotatable rollers (9) that define cord passages (4) transversely offset from one another, and the rollers (9) are specifically designed, intended, and marketed to respectively independently guide outrigger cords (3) longitudinally along an outrigger when the housing (8) is mounted to the outrigger (2)
wherein said housing and rotatable portions are configured to maintain the cord passages about a common axis fixed in angle relative to said at least one outrigger structure when said housing portion is mounted thereto by said releasable fastening portion, and	The housing (8) and rollers (9) maintain the cord passages (3) about a common axis that is fixed in angle (Angle A) relative to the outrigger when the housing (8) is mounted to the outrigger (2) with nub (10) (or alternately, with clamps with fasteners (10a))	Pulley Upgrade housing (8) and rotatable rollers (9) are specifically designed, intended, and marketed to maintain the cord passages (3) about a common axis that is fixed in angle (Angle A) relative to an outrigger when the housing (8) is mounted to the outrigger (2) with the nub (10) or clamps with fasteners (10a)

**See e.g.,* pg. 15 of Rupp 2024-2025 Catalog and Rupp Marine website pages (Exh. E)

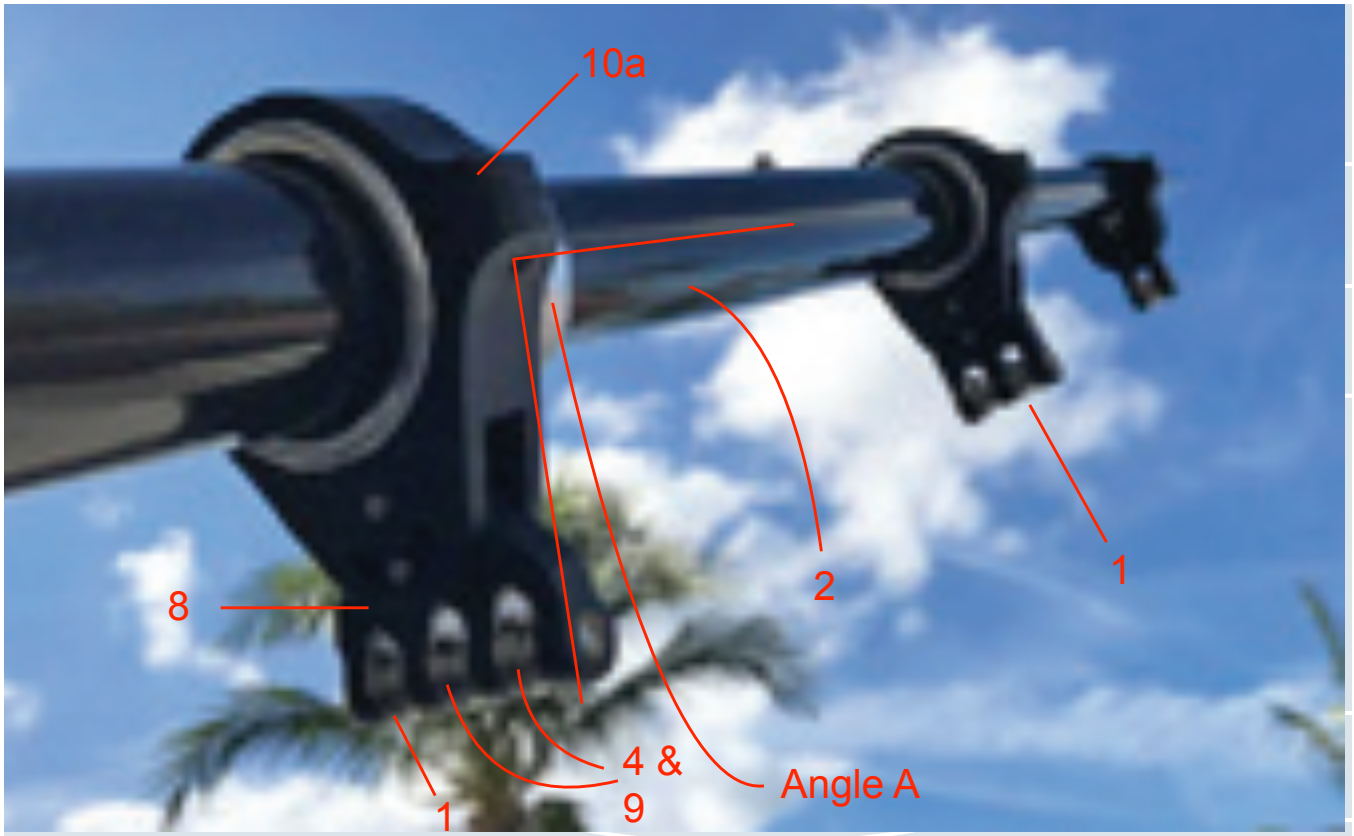
RUPP MARINE'S OUTRIGGER WITH PULLEY OPTION AND PULLEY UPGRADE

Claim 1 of '566 Patent	Rupp Marine's Outrigger with Pulley Option*	Rupp Marine's Pulley Upgrade*
wherein said rotatable portion is configured to enable said plurality of outrigger cords to be independently and simultaneously controlled for displacement without undue interference of any one of said plurality of outrigger cords with other of said plurality of outrigger cords.	The rotatable rollers (9) enable the outrigger cords (3) to be independently and simultaneously movable without undue interference of other outrigger cords (3)	The rotatable rollers (9) in Rupp's Pulley Upgrades are specifically designed, intended, and marketed to enable outrigger cords (3) to be independently and simultaneously moved without undue interference of other outrigger cords (3)

**See e.g.,* pg. 15 of Rupp 2024-2025 Catalog and Rupp Marine website pages (Exh. E)



From: CA-04PC-3X (https://ruppmarine.com/products/ca-04pc-3x-upgrade-only-can-only-be-purchased-with-22-tel-poles?_pos=1&_psq=04&_ss=e&_v=1.0)



Pulley Option Available

From: Rupp Marine Catalog, pg. 15

RIGGING INSTRUCTIONS

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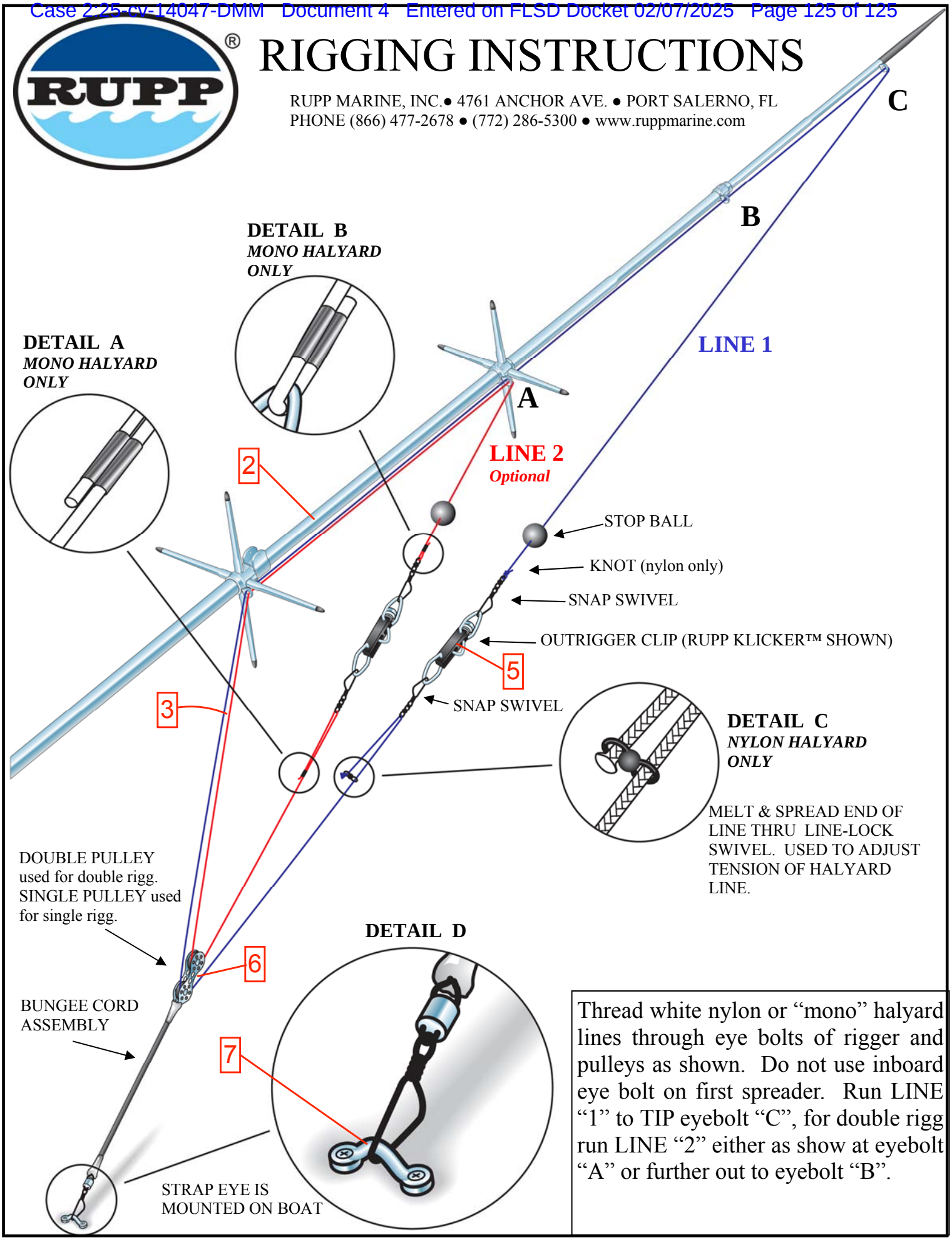

Thread white nylon or "mono" halyard lines through eye bolts of rigger and pulleys as shown. Do not use inboard eye bolt on first spreader. Run LINE "1" to TIP eyebolt "C", for double rigg run LINE "2" either as show at eyebolt "A" or further out to eyebolt "B".